SERVICE MANUAL & PARTS LIST (without price)

Handheld Personal Computer

A-20 (ZX-340)

CASSIOPEIA

DEC. 1997

A-20

INDEX

CASIO®

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* i486DX and Pentium are registered trademarks of Intel Corporation.

HARDWARE SPECIFICATIONS

General Specifications

Model: A-20

Display: 640 × 240 dots/0.24 dot pitch, FSTN LCD, 4 grayscale monochrome

CPU: SH3

Memory **RAM:** 8M bytes
ROM: 8M bytes

Speaker: Sound

Interfaces: RS-232C: 115.2K BPS
Data communication jack
PC card slot
CompactFlash card slot
Infrared port (IrDA compatible protocol)
Communication distance: 10 to 70 cm
Maximum Speed: 115.2K BPS

Power Supply: Main
Two AA-size alkaline batteries LR6 (AM3);rechargeable battery pack(A-B10LT); AC adaptor (AD-C50200)
Back-up
One CR2032 lithium battery

Power Consumption: 3.0 W

Battery Life: Main
Two AA-size alkaline batteries: 25 hours (in Word, continuous cycle of one-minute input and 10-minutes input standby), 10 hours (input of 90 characters per minutes in Word)
Rechargeable battery pack: 15 hours (in Word, continuous cycle of one-minute input and 10-minutes input standby), 10 hours (input of 90 characters per minutes in Word)
* Main Battery life is shortened considerably by use of a modem card or any other high power consumption PC card.
Back-up
5 year (when main battery is replaced immediately after appearance of low battery message)
1 month (when unit is left without a main battery)

Operating Temperature: 0 °C to 40 °C (32 °F to 104 °F)

Dimensions (excluding projections):
Folded: 24.5H × 185W × 94D mm (1"H × 7-1/4"W × 3-11/16"D)
Weight: 430 g (15.2 oz) including batteries

Electrical Specifications

Current Consumption (V-in: 2.6 V ± 0.1 V, LCD Contrast VR: MID.):

Main Battery: Diagnostics Program with alkaline batteries

80 MHz:	650 mA or under
Sleep:	50 mA or under
Standby:	1.4 mA or under

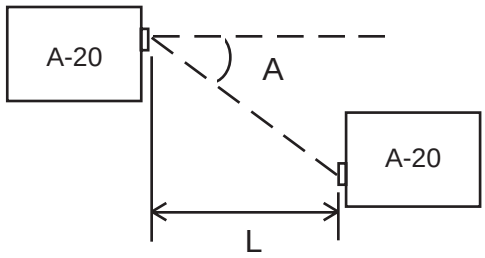
Back-up Battery: OFF: 450 μA

Voltage Detectors:

VDET1: 2.0 V ± 1% V or under (Low battery message detector for alkaline batteries)
VDET2: 1.6 V ± 1% V or under (Foced power off detector for alkaline batteries)
VDET1R: 3.3 V ± 2% V or under (Low battery message detector for rechargeable battery)
VDET2R: 3.0 V ± 2% V or under (Foced power off detector for rechargeable battery)
VDETS: 2.7 V ± 1% V or under (Low battery message detector for back-up battery)

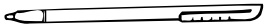
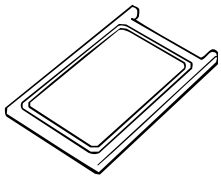
IrDA:

No.	Length (L)	Angle (A)
1	L = 80 cm	A = ±15 degree
2	L = 10 cm	A = 0 degree



ACCESSORIES

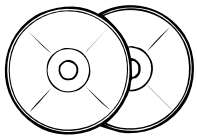
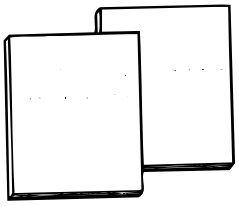
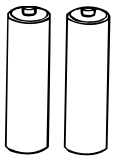
- A-20 Unit
- Stylus
- Dummy Card
- RS-232C Cable

The stylus is inserted into the CASSIOPEIA.

The dummy card is inserted in the CASSIOPEIA.

- CD-ROM (two)
- Manuals (Hardware Manual, User's Guide)
- AA-size Alkaline Batteries (two)

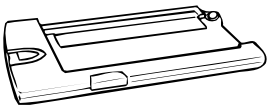




- AC Adapter
- CR2032 Lithium battery

*The actual configuration of the AC adapter may differ from that shown in the above illustration.

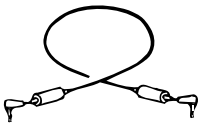
OPTIONS

- AC Adapter
- Rechargeable Battery Pack A-B10LT
- Cradle A-D10LC



Data Communication Cable SB-62

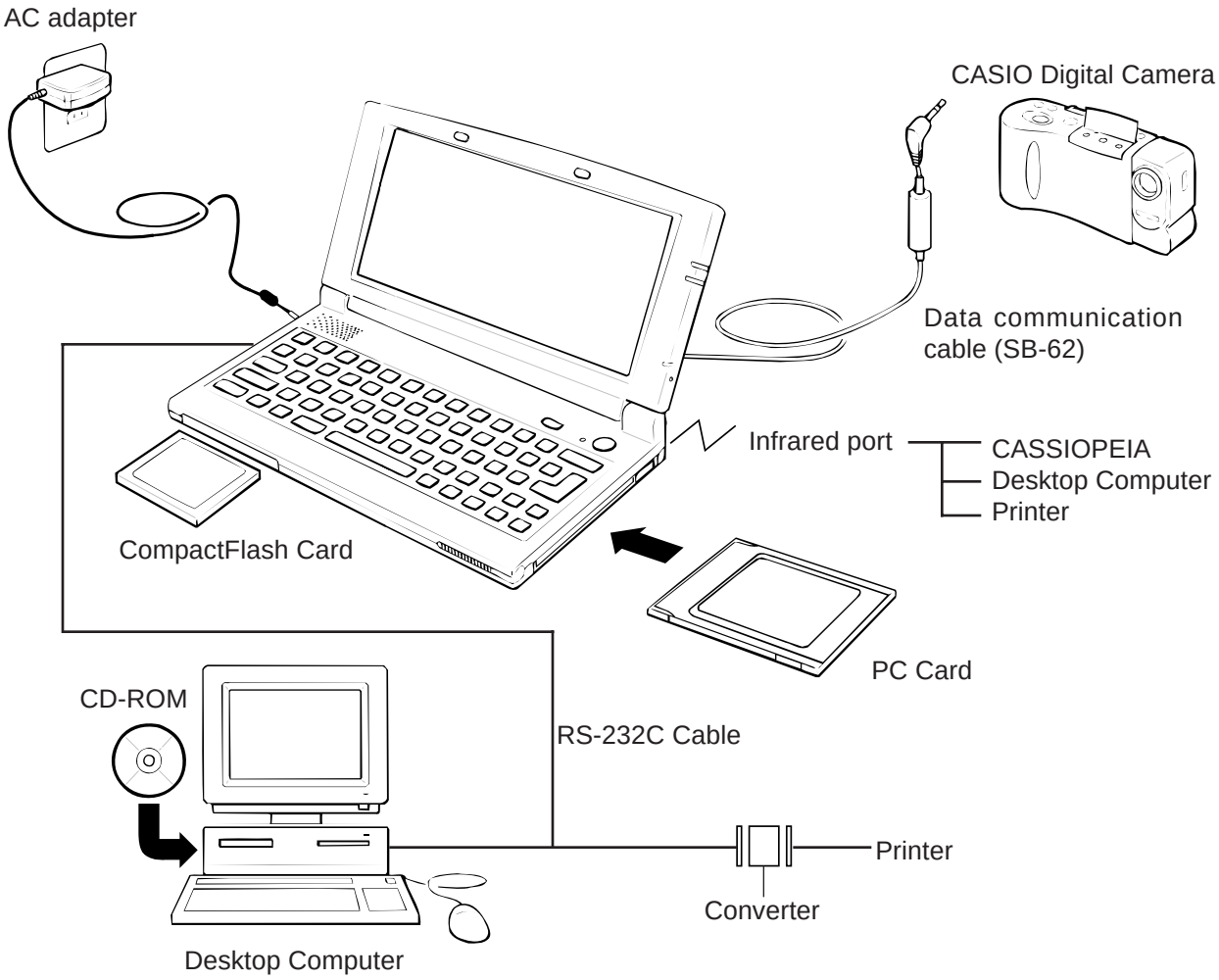
This cable is used to connect a digital camera or other external equipment to the A-20.



Note: Optional materials are sold separately.

SYSTEM CONFIGURATION

⚠ Note that CASSIOPEIA will not operate under AC adapter power alone if its main batteries are not loaded.

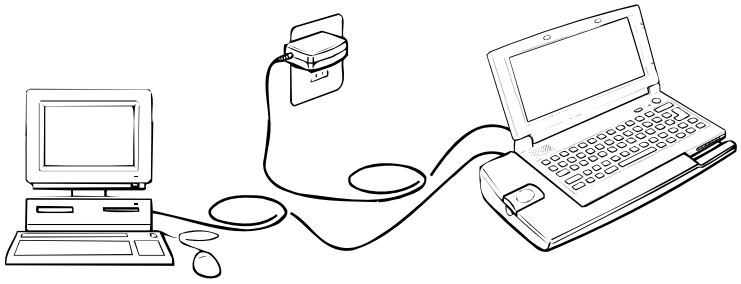


Important ⚠

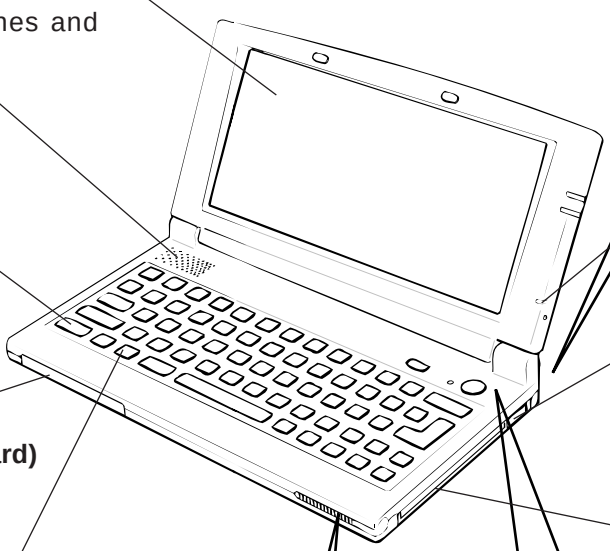
If you have a notebook PC with IrDA capabilities or a built-in modem, its COM port may not be set up for use as a standard serial interface. In such a case, you must change the COM port settings so it can be used as a standard serial interface. You should also check which COM ports are enabled on a desktop PC before starting to install Windows CE Services.

See the documentation that comes with your PC for details.

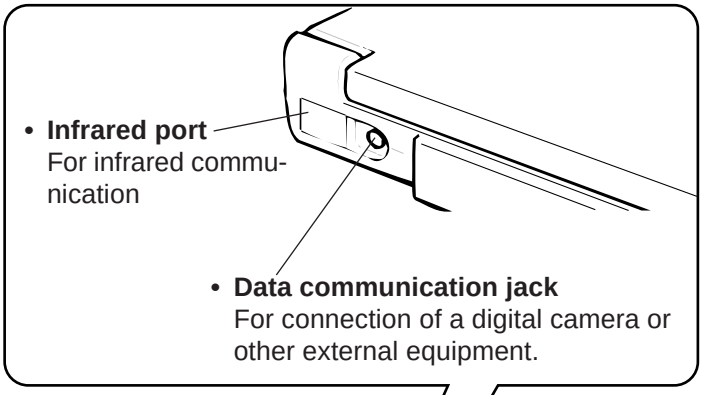
Connection to a desktop computer is quick and easy using the optional A-D10LC Cradle.



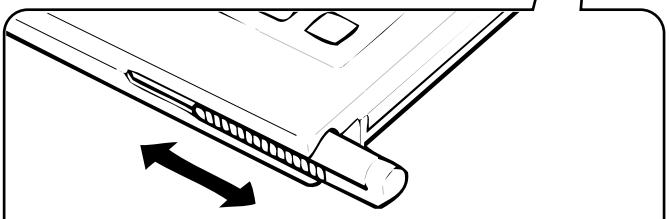
GENERAL GUIDE



- **Touch screen**
  Displays text data and operational indicators, as well as icons that can be operated using the stylus.
- **Speaker**
  Outputs alarm tones and other sounds.
- **Keyboard**
- **Card slot (CompactFlash card)**
- **Fn (Function) key**
  Pressing this key and then a number key launches Calendar, Contacts, Tasks, Pocket Word, Pocket Excel, Pocket Power Point or Inbox.

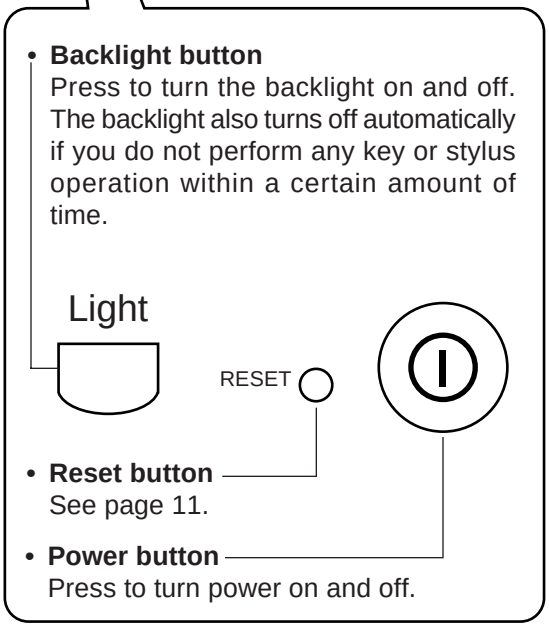


- **Infrared port**
  For infrared communication
- **Data communication jack**
  For connection of a digital camera or other external equipment.
- **Microphone**
  For voice and other sound recording.
- **Card eject button (PC card)**
  Press to eject the card from the card slot.
- **Card slot (PC card)**



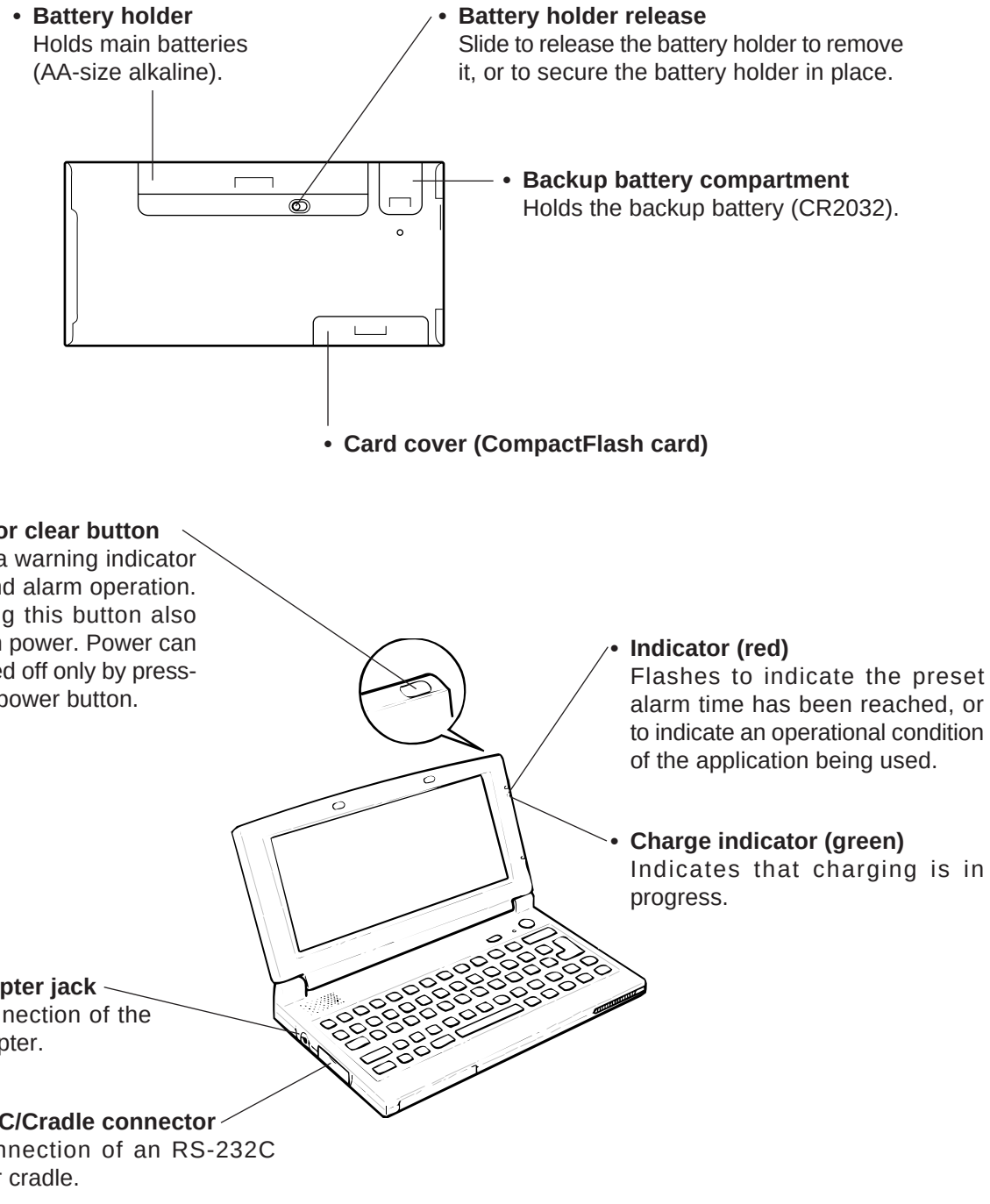
To remove: Pull on the part of the stylus that protrudes from the unit.
To replace: Taking care to orient the stylus correctly, press it until it clicks into place.

- **Stylus**
  For performing operations on the touch screen.



- **Backlight button**
  Press to turn the backlight on and off. The backlight also turns off automatically if you do not perform any key or stylus operation within a certain amount of time.
- **Reset button**
  See page 11.
- **Power button**
  Press to turn power on and off.

Important ⚠
Take care to avoid damaging or losing the stylus.


• Battery holder
Holds main batteries (AA-size alkaline).
• Battery holder release
Slide to release the battery holder to remove it, or to secure the battery holder in place.
• Backup battery compartment
Holds the backup battery (CR2032).
• Card cover (CompactFlash card)
• Indicator clear button
Clears a warning indicator (red) and alarm operation. Pressing this button also turns on power. Power can be turned off only by pressing the power button.
• Indicator (red)
Flashes to indicate the preset alarm time has been reached, or to indicate an operational condition of the application being used.
• Charge indicator (green)
Indicates that charging is in progress.
• AC adapter jack
For connection of the AC adapter.
• RS-232C/Cradle connector
For connection of an RS-232C cable or cradle.

ADJUSTING DISPLAY CONTRAST

Adjust display contrast whenever the figures on the display become dim and difficult to see. To adjust display contrast, hold down [Alt] and press [<] (to make the display lighter) or [>] (to make the display darker).

DESKTOP COMPUTER SYSTEM CONFIGURATION

The computer configuration described below is required to support the installer and the software applications contained on the Microsoft CD-ROM supplied with the CASSIOPEIA.

- Microsoft Windows NT Workstation 4.0 or Windows 95 (U.S. version)
- Desktop computer with a 486/33DX or higher processor (Pentium P90 recommended)
- 12 MB of memory for Windows NT Workstation 4.0
  8 MB of memory (12 MB recommended) for Windows 95
- Hard disk drive with 10 to 50 MB of available hard disk space (actual requirements will vary based on selection of features and user's current system configuration)
- Available 9 or 25 pin communications port (adapter required for 25 pin communication port)
- One CD-ROM drive
- VGA or higher-resolution graphics card (Super VGA 256-color recommended)
- Keyboard
- Microsoft Mouse or compatible pointing device

Options for either Windows NT Workstation 4.0 or Windows 95:

- Audio card/speakers for sound
- Microsoft Office 97 or Microsoft Office 95
- Serial or built-in infrared adapter for synchronization
- Modem for remote synchronization
- Ethernet LAN connection for remote synchronization

Important ⚠

- If you have a notebook PC with IrDA capabilities or a built-in modem, its COM port may not be set up for use as a standard serial interface. In such a case, you must change the COM port settings so it can be used as a standard serial interface. You should also check which COM ports are enabled on a desktop PC before starting to install Windows CE Services. See the documentation that comes with your PC for details.

Note: Some of the applications contained on the CASSIOPEIA Bonus Software Applications CD-ROM may require a system configuration different from that described above. See the applicable files (ReadMe.txt and other files) that are also provided on the CD-ROM.

SETTING UP

Use the following procedure to set up the CASSIOPEIA before using it for the first time.

1. Load the main batteries.
- Load two AA-size alkaline batteries into the battery holder and then attach the holder to the CASSIOPEIA (page 9).
2. Load the backup battery (page 10)
3. Wait for about five seconds, and then press the power switch to turn on power.
- Turning on power causes the CASSIOPEIA display to change in the sequence shown below.

4. Set up the CASSIOPEIA .
- Perform the procedures in accordance with the guidance messages that appear on the screen.

Important ⚠

- Should the display lock up or go blank at this time, first perform the full reset (page 12). If this does not correct the problem, remove the main batteries from the CASSIOPEIA and then remove the back-up battery. Wait for about five minutes, and then perform this procedure again, starting from step 1. Be sure that the positive (+) and negative (–) poles of the batteries are facing correctly when you reload them into the CASSIOPEIA.
- If the message “A problem with memory contents has been found, and memory must be initialized...” appears, perform the full reset operation described on page 12.
- If the images on the display appear dim, use the procedure on page 6 to adjust the contrast.
- **Further information on the above procedures can be found in the H/PC Companion manual in the section describing system set up.**

REPLACING BATTERIES

The CASSIOPEIA has a dual power supply that consists of main batteries and a backup battery. Be sure to load the main batteries and a back-up battery before using the CASSIOPEIA for the first time after purchasing it. Also, replace batteries as soon as possible after they start to get weak.

Important! ⚠

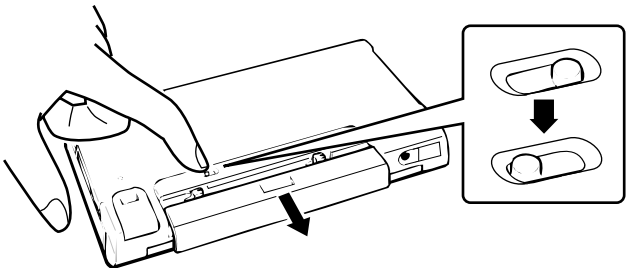
- Never remove both the main batteries and the backup battery from the CASSIOPEIA at the same time. If you do, data stored in memory can be corrupted or lost entirely.
- Whenever the main batteries and the backup battery both require replacement, be sure to replace the main batteries first, before replacing the backup battery.
- Use two AA-size alkaline batteries or the optional rechargeable battery pack for the main power supply, and a CR2032 lithium battery for the back-up power supply. Never use any other types of battery with the CASSIOPEIA.
- Be sure to watch out for signs of low battery power. Replace main batteries as soon as possible after the message shown below appears on the display.
  "Your main batteries are running very low on power. Please change the batteries at your next opportunity."

  Replace the backup battery as soon as possible after the message shown below appears.
  "Your backup battery is very low or missing. Data loss may result from failure to replace the battery very soon."

  Failure to replace batteries when they are low can result in corruption or loss of data stored in memory.

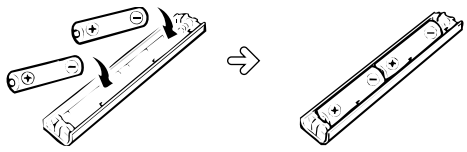
To replace the main batteries

1. Make sure the CASSIOPEIA is turned off.
   - If the CASSIOPEIA is on, press the power switch to turn it off.
2. Close the CASSIOPEIA and turn it over.
3. While holding the battery holder release in the "FREE" position, slide the battery holder from the CASSIOPEIA.

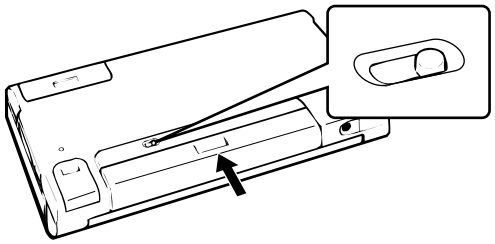


   - While holding the battery holder release in position, grasp the center of the battery holder and carefully pull it from the CASSIOPEIA.

4. Remove the old batteries from the battery holder and load two new ones.
   - When loading new batteries, make sure that their positive (+) and negative (–) ends are facing correctly.

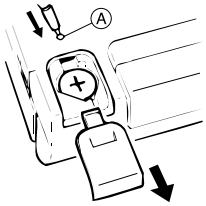


5. Reattach the battery holder to the CASSIOPEIA.
- The battery holder will emit a click and the battery holder release will automatically lock when the battery holder is securely in place.

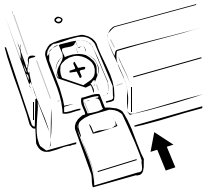


To replace the backup battery

1. Make sure the CASSIOPEIA is turned off.
- If the CASSIOPEIA is on, press the power switch to turn it off.
2. Close the CASSIOPEIA and turn it over.
3. While pressing the release Ⓐ with the stylus, slide the backup battery cover from the CASSIOPEIA.



4. Remove the old battery.
5. After wiping the surface of a new battery with a soft, dry cloth, load it into the CASSIOPEIA with its positive (+) side facing up (so you can see it).
6. Slide the backup battery cover back on to the CASSIOPEIA until it snaps securely into place.



Important! ⚠

Failure to observe any of the following battery precautions can cause batteries to leak, creating the danger of property damage, iniury and fire due to explosion.

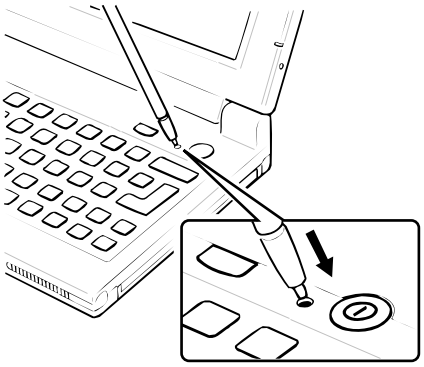
- When loading batteries,make sure their positive (+) and negative (–) poles are facing correctly.
- Never mix new batteries with old ones.
- Never mix batteries of different types.
- Use only the batteries that are specifically recommended for the CASSIOPEIA.

RESET

You should reset the CASSIOPEIA whenever it stops working or whenever some other operational problem has caused it to malfunction.

To reset the CASSIOPEIA

1. Press the RESET button with the stylus.
- This automatically turns off CASSIOPEIA power.



2. Press the power switch to turn on power and start the reset process.
- What happens next depends on memory status.

Case A: Memory Contents Not Corrupted

In this case, the display changes in the sequence shown below.

Start up screen → Nomal Desktop

Normal operation is restored after the desktop appears, with all memory contents and settings unchanged.

Case B: Memory Contents Corrupted

In this case, the message “A problem with memory contents has been found, and memory must be initialized...” appears on the screen. Use the stylus to touch the screen to change in the sequence shown below.

Start up screen → Set up screens

Set up the CASSIOPEIA as described on page 7 of this manual. The desktop appears after set up is complete.

When memory is seriously corrupted, the above procedure deletes all data stored in memory. When memory contents are not deleted*, save any data you need onto a computer disk or other medium and then perform the full reset procedure on page 12.

*Data may be corrupted, so edit data after checking it.

FULL RESET

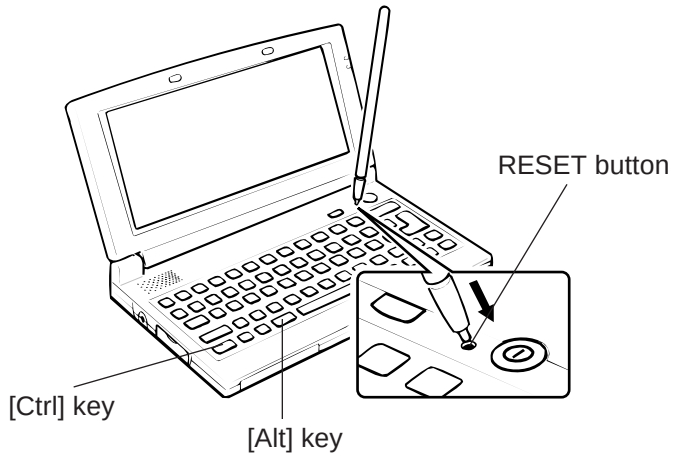
Perform the full reset when you want to clear all memory contents and settings because memory contents are corrupted, because you have forgotten the security code, or for any other reason.

Important ⚠

The following procedure deletes all data in memory. Be sure to save any important data contents you may need later to a computer disk or other medium. Always keep separate back-up copies of important data.

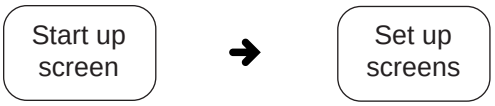
To perform a full reset

1. While holding down the [Ctrl] key and the [Alt] key, press the RESET button.



2. The message “All memory contents will be deleted! Touch the screen to continue...” appears on the display.
- If you don’t want to perform a full reset, press the RESET button.
  This performs the normal reset, which does not clear memory contents.

3. To continue with the full reset procedure and clear all memory contents, touch the screen with the stylus.
- The display changes in the sequence shown below.



- Set up the CASSIOPEIA as described on page 7 of this manual.

CONNECTING TO A DESKTOP COMPUTER

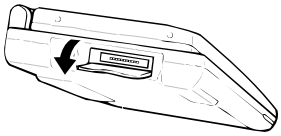
Use the following procedure to connect the CASSIOPEIA to a desktop computer.
Note that exchanging data with a desktop computer requires Microsoft Windows CE Services, which is on the Microsoft CD-ROM that is included with the CASSIOPEIA.

Requirements

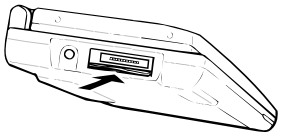
RS-232C cable (supplied with CASSIOPEIA)

To connect to a desktop computer

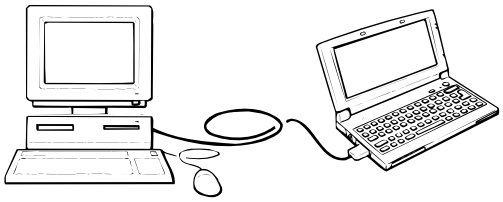
1. Open the RS-232C connector cover on the side of the CASSIOPEIA.



2. Slide the cover into the CASSIOPEIA case as shown below.



3. Use the RS-232C cable to connect the CASSIOPEIA to your desktop computer.



- You can also connect the CASSIOPEIA to your computer using the cradle. See the documentation that comes with the cradle for details.
- If your desktop computer supports infrared communications, you can also use CASSIOPEIA's infrared port to exchange data.

REPLACING THE PC CARD

The CASSIOPEIA comes equipped with a PC card slot that supports memory, modem and other PC cards*.

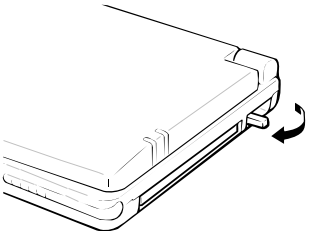
* Use only PC cards that are compatible with the CASSIOPEIA.

Important ⚠

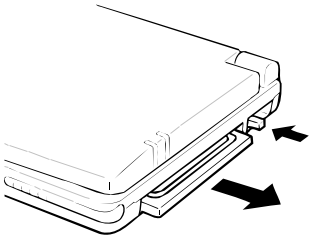
- Be sure to keep the dummy card that comes with the CASSIOPEIA inserted in the card slot whenever you are not using a PC card.
- Be sure to save any unsaved input or edited data before replacing the PC card.
- Never remove the PC card from the CASSIOPEIA while a PC card operation is in progress. Doing so can corrupt CASSIOPEIA memory and PC card memory.

To replace the PC card

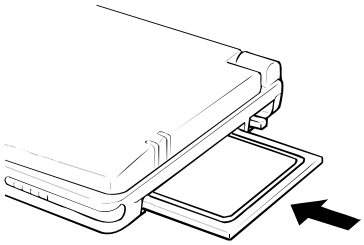
1. Extend the card eject button.



2. Press the card eject button to partially eject the card, and then pull the card out of the slot.



3. Insert a new PC card into the slot.



- Push the card into the slot as far as it will go.

Important ⚠

- Take care to orient the card correctly. The top of the card should be facing in the same direction as the top of the CASSIOPEIA. The card will stop part way into the slot if it is not oriented correctly.
- If the card stops part way into the slot, do not try to force it. Doing so can damage the card or the CASSIOPEIA. Remove the card, make sure it is oriented correctly, and then try inserting it again.

4. Return the card eject button back to its folded position.

Important ⚠

- See the documentation that comes with the PC card and the H/PC Companion manual for information on PC card operations.

REPLACING THE COMPACTFLASH CARD

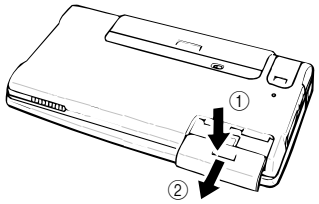
The CASSIOPEIA comes equipped with a card slot that supports CompactFlash cards.

Important ⚠

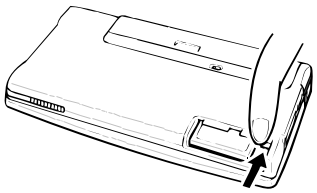
- If the card stops part way into the slot, do not try to force it. Doing so can damage the card or the CASSIOPEIA. Remove the card, make sure it is oriented correctly, and then try inserting it again.
- Be sure to save any unsaved input or edited data before replacing the CompactFlash card.

To replace the CompactFlash card

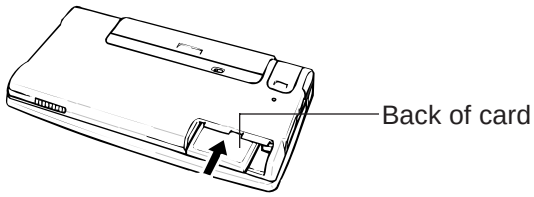
1. Make sure that CASSIOPEIA power is turned off.
2. While pressing down on the card cover ①, slide the cover from the CASSIOPEIA ②.



3. Press the card eject button to partially eject the card, and then pull the card out of the slot.



4. Insert a new CompactFlash card into the slot.
- Double-check to make sure that the card is oriented correctly before you insert it into the slot.



- Push the card into the slot as far as it will go.

Important ⚠

- Take care to orient the card correctly. The top of the card should be facing in the same direction as the top of the CASSIOPEIA. The card will stop part way into the slot if it is not oriented correctly.

5. Replace the card cover.

Important ⚠

- In order to protect data stored in memory, the CASSIOPEIA automatically turns off whenever you remove the card cover. Also, power will not turn on while the cover is removed.

CONNECTING TO EXTERNAL EQUIPMENT

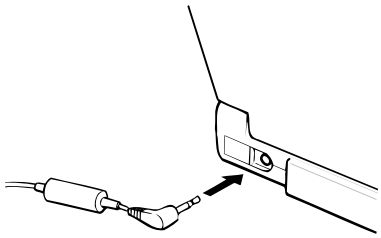
You can connect external equipment to the data communication connector. You can also use special software to set up the CASSIOPEIA to exchange image data with a CASIO digital camera.
See the documentation that comes with the software for details.

Requirements

Optional data communication cable (SB-62)

To connect external equipment

1. Make sure the external equipment and CASSIOPEIA are both turned off.
2. Use the SB-62 cable to connect the CASSIOPEIA to the external equipment.



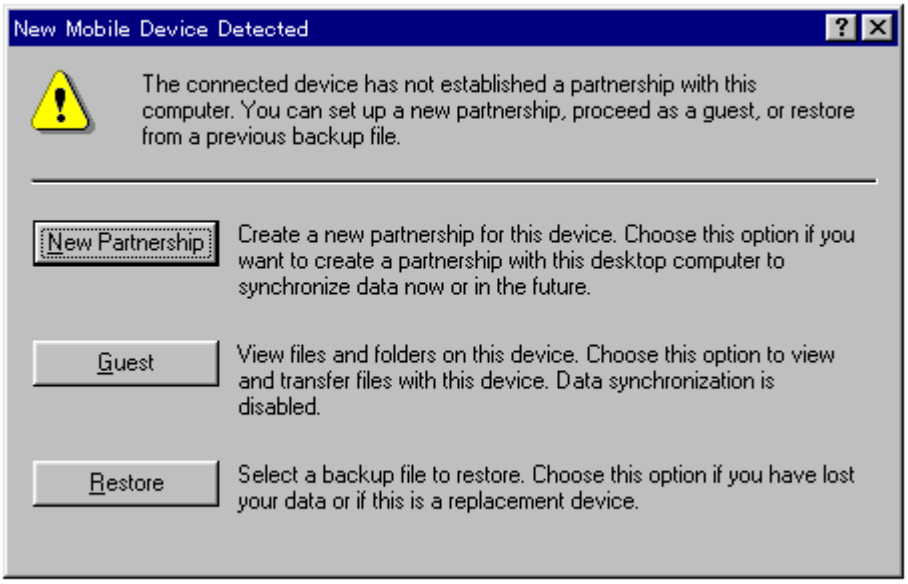
MEMORY BACKUP / RESTORE

Make the backup copy by Windows CE Services to your PC before repairing A-20, and restore the data from PC to user's A-20 after repairing.
For the details of Backup/Restore, refer to the operation manual of Windows CE Services.

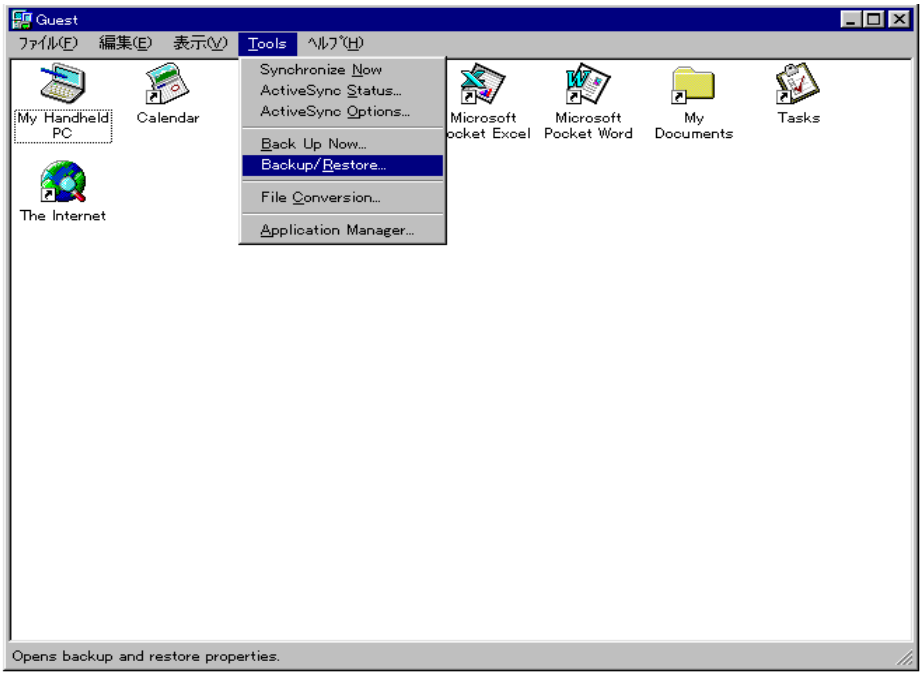
Notes: 1* Backup program of Windows CE Services back up only files and databases. Setup data including Owner, World Clock and so on, can not be backed up to PC.
2* Use AC adaptor when making backup copy and restoring.

Backup

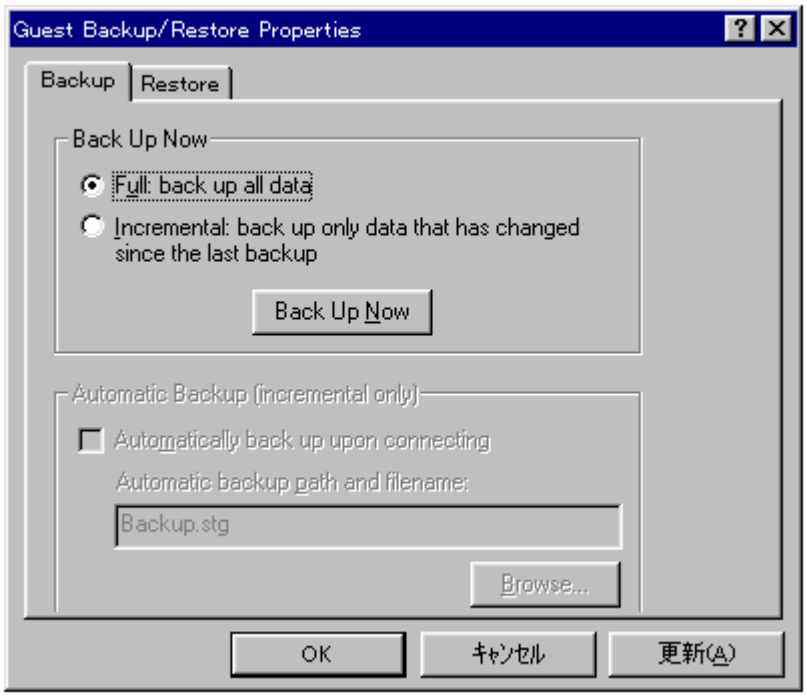
1. Connect user's A-20 to your PC with RS-232C cable.
2. Start Windows CE Services on your PC.
3. Windows CE Services detects A-20 is connected automatically.
4. PC shows the following dialog and click "Guest".


New Mobile Device Detected
The connected device has not established a partnership with this computer. You can set up a new partnership, proceed as a guest, or restore from a previous backup file.
New Partnership
Create a new partnership for this device. Choose this option if you want to create a partnership with this desktop computer to synchronize data now or in the future.
Guest
View files and folders on this device. Choose this option to view and transfer files with this device. Data synchronization is disabled.
Restore
Select a backup file to restore. Choose this option if you have lost your data or if this is a replacement device.

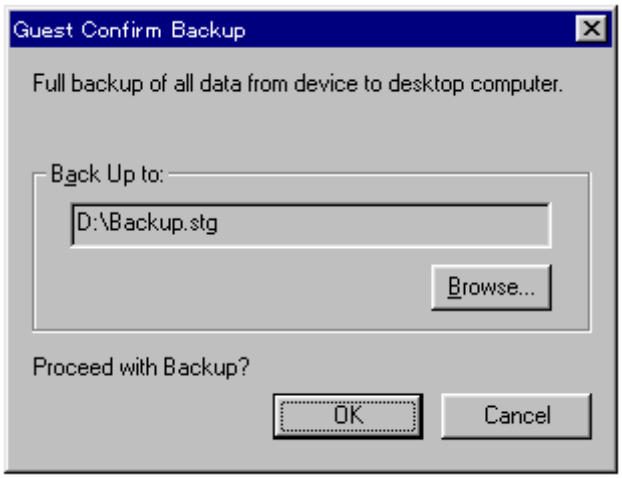
5. Select "Backup/Restore..." from "Tools" pop up menu.

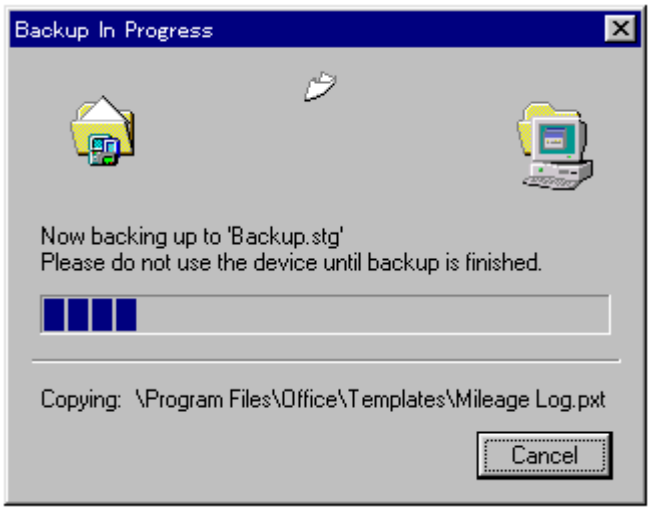


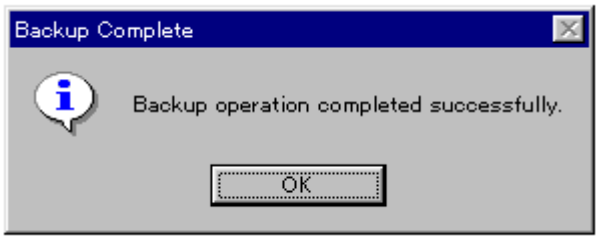
6. Click “Full: back up all data” and “Back Up Now”.



7. Confirm the file name of bakup copy and then click “OK”. Backup starts.



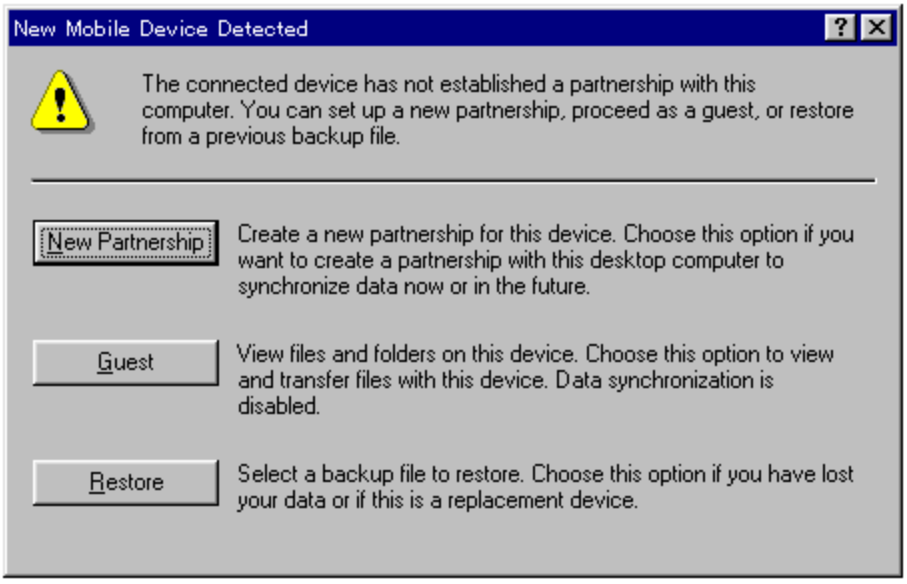

Backup In Progress
Now backing up to 'Backup.stg'
Please do not use the device until backup is finished.
Copying: \Program Files\Office\Templates\Mileage Log.pxt
Cancel



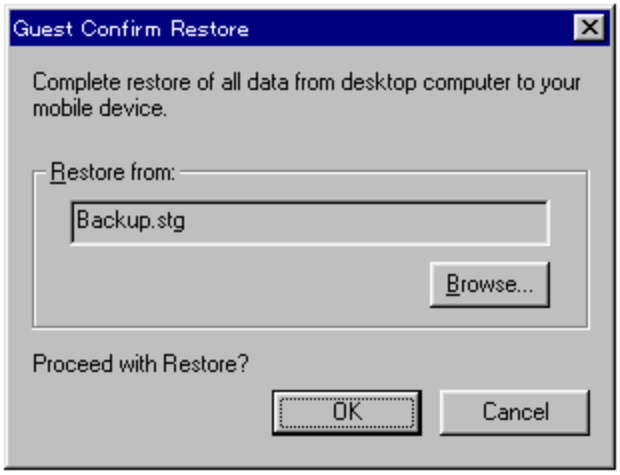
Restore

Execute Restore after repairing.

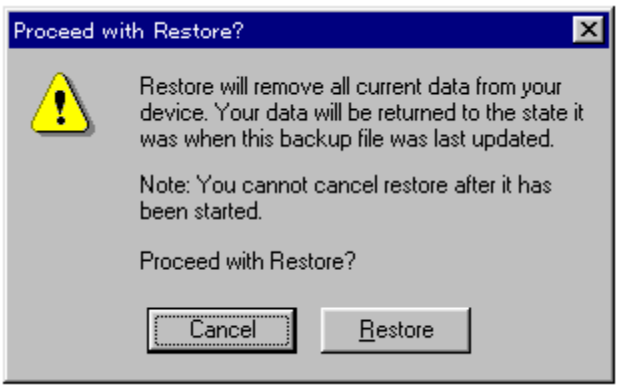
1. Turn on the user's A-20 and then Welcome wizard appears.
2. Execute touch panel calibration and then skip other setups after calibration.
3. Connect repaired A-20 to your PC with RS-232C cable.
4. Start Windows CE Services on your PC.


New Mobile Device Detected
The connected device has not established a partnership with this computer. You can set up a new partnership, proceed as a guest, or restore from a previous backup file.
New Partnership
Create a new partnership for this device. Choose this option if you want to create a partnership with this desktop computer to synchronize data now or in the future.
Guest
View files and folders on this device. Choose this option to view and transfer files with this device. Data synchronization is disabled.
Restore
Select a backup file to restore. Choose this option if you have lost your data or if this is a replacement device.

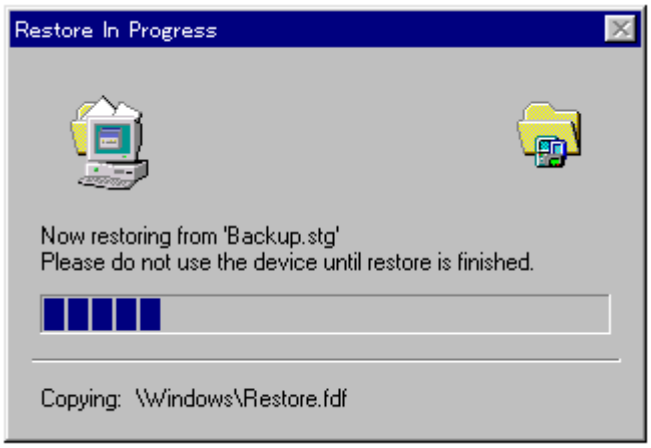
5. Click "Restore" and confirm the file name backed up. Then click "OK".



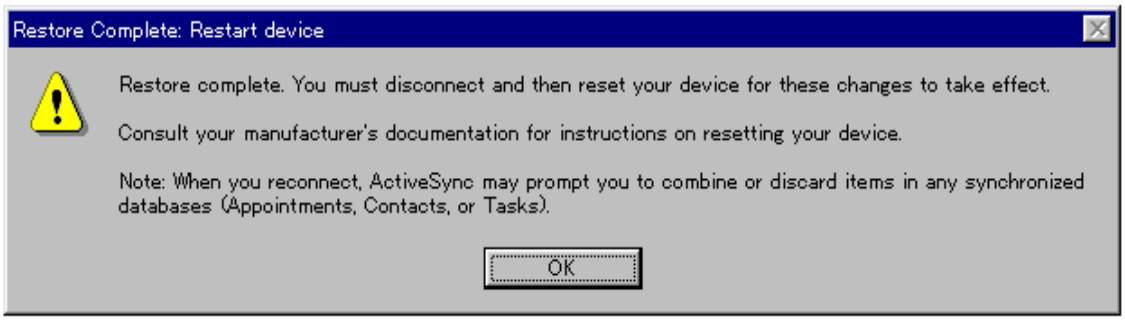
6. Click "Restore".


Proceed with Restore?
Restore will remove all current data from your device. Your data will be returned to the state it was when this backup file was last updated.
Note: You cannot cancel restore after it has been started.
Proceed with Restore?
Cancel
Restore

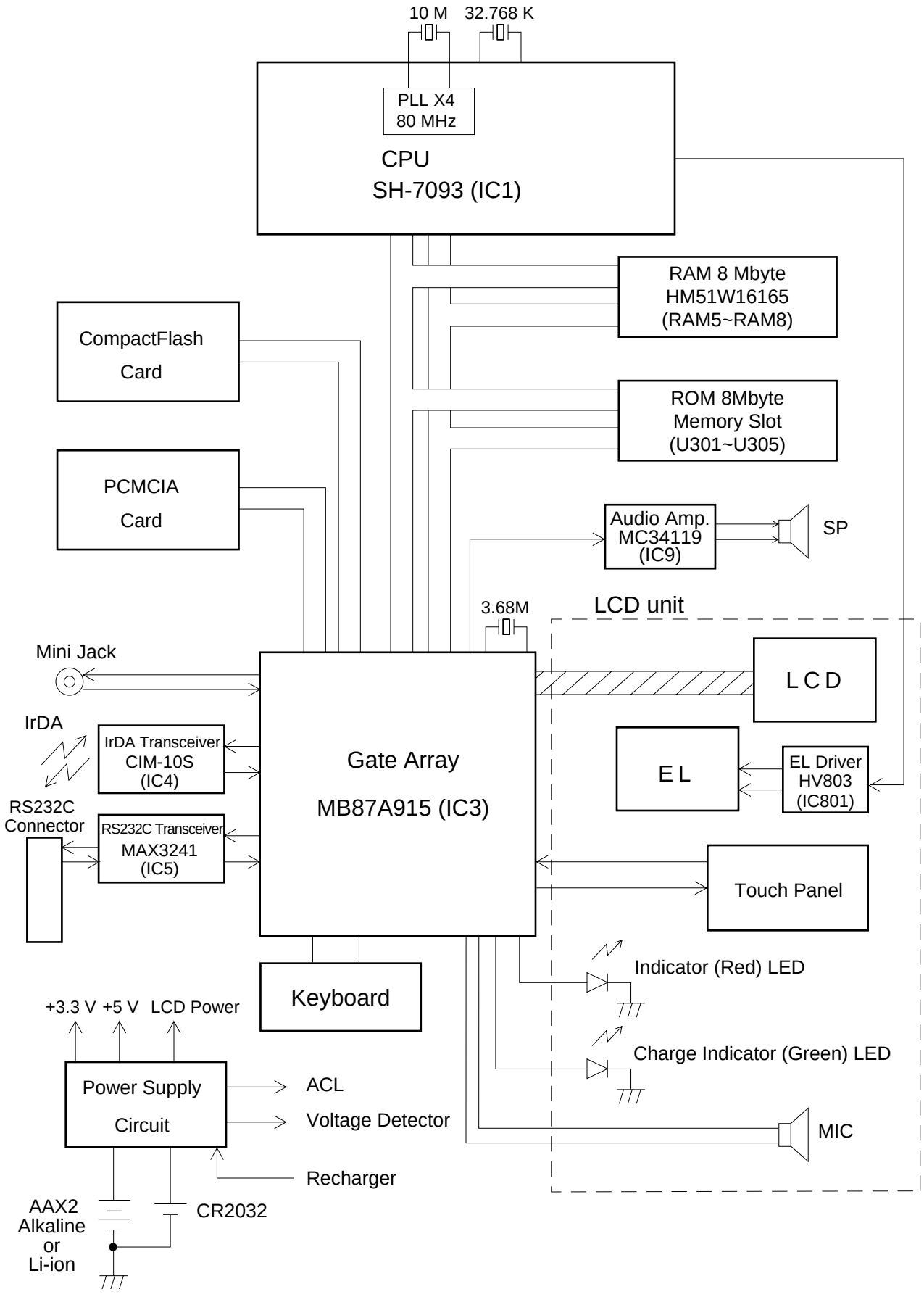
7. Restoring starts.


Restore In Progress
Now restoring from 'Backup.stg'
Please do not use the device until restore is finished.
Copying: \Windows\Restore.fdf

8. Click “OK”.


Restore Complete: Restart device
Restore complete. You must disconnect and then reset your device for these changes to take effect.
Consult your manufacturer's documentation for instructions on resetting your device.
Note: When you reconnect, ActiveSync may prompt you to combine or discard items in any synchronized databases (Appointments, Contacts, or Tasks).
OK

BLOCK DIAGRAM



DEVICE FEATURES

Device	Features
CPU	**SH-7093 (IC1)** Hitachi 32 bit RISC CPU. Sleep/Standby Power Mode. TLB supports 1K/4K bytes page,128 entries. 8K bytes Cash. Interrupt Controller. User Break Controller. Bus State Controller. Watch Dog Timer. CASIO proprietary RTC. 2K bytes Mask ROM. ON Controller. 1 ch Serial I/F. 1 ch Serial I/F with 16 bytes FIFO. 1 channel Reload Timer. 2 channel Free Run Timer.
System RAM	**HM51W16165 (RAM5~RAM8)** 8M bytes DRAM (16M bit DRAM 4K refresh)
ROM	8M bytes Mask ROM (32 bit Mask ROM)
Memory Slot	**Z370-ROM PCB** Connects to memory board with ROM. This connects a development board as well.
System LSI	**MB87A915 (IC3)** LCD Controller. System Controller. DRAM Access Controller. Interrupt Controller. Key Controller. Audio Controller. DMA Controller. Dead Man's Switch. Touch Panel Controller. Infra Red Controller. RS232C I/F Controller. IrDA I/F Controller. 3-pin I/F Controller. LED Controller. PCMCIA Controller. CompactFlash Controller.
LCD	4 gray levels 480 × 240, landscape 0.24 mm/pitch
LCD Driver	2 × 120 ch common driver. 3 × 160 ch segment driver with SRAM and disply control logic.
Touch Panel	Resistive input device at the screen pixel resolution. Just fitting to LCD panel. Controller in System LSI.

Device	Features
Touch Panel A/D	10 bit analog to digital converter in System LSI.
Audio D/A	10 bit digital to analog converter in System LSI. 8/11.025/22.05 kHz sampling.
Audio A/D	10 bit analog to digital converter in System LSI. 8/11.025/22.05 kHz sampling.
Speaker	20 mm dynamic type.
PCMCIA	One slot for PCMCIA Type I/II card. Compliance with PCMCIA ver.2.1.
IrDA / RS232C (alternative)	Serial I/F with 16 byte FIFO in CPU. 115.2 kbaud. IrDA 0 - 1 m. 9-pin RS232C ±12 V I/F.
3-pin Serial Port	CASIO proprietary serial interface to Casio's digital cameras and electric organizerand so on. Up to 38.4 kbaud. 0 to +5 V I/F.
Dead Man's Switch	'Manual Reset' occurs each 15 seconds when the CPU does't reset the counter.
Notification LED	LED Controller in System LSI.
Notification Button	Independent switch.
LCD Contrast	LCD Contrast is able to be handled by the software using electric volume and LCD panel driver function.
Keyboard	56 keys and independent 'Ctrl','Alt','Right Shift','Caps Shift','Alt-Graph','Fn (means Function: CASIO original)'and "Windows". 'ON' key is an independent key.
ACL	Automatic hard reset for first time. "Power ON Reset" occurs in case of ACL.
Reset Mechanism	'Manual Reset' occurs when user pushes 'Reset Switch'. 'Power ON Reset' occurs when user push 'Reset Switch' with pressing 'Notification Switch'.
Battery Cover Detector	Detects both open and closed.
Battery Detector	Detects Alkaline or NiMH.
Voltage Detector	5 levels with Alkaline / NiMH and 1 level with backup battery.
Battery	Alkaline AA × 2. NiMH. AC adapter.
Power Supply	3.3 V for most hardware logic. 5 V for PCMCIA and 3-pin serial interface. 24 V for LCD panel driver.

LSI/IC DATA

SH-7093 (CPU / IC1)

No.	Pin Name	Io/Out	Function	To/From
1	D27	I/O	Data bus	
2	D26	I/O	Data bus	
3	D25	I/O	Data bus	
4	D24	I/O	Data bus	
5	D23/Port 7	I/O	Data bus	
6	Vss		GND	
7	Vcc		+3.3V source	
8	D22/Port 6	I/O	Data bus	
9	D21/Port 5	I/O	Data bus	
10	D20/Port 4	I/O	Data bus	
11	D19/Port 3	I/O	Data bus	
12	D18/Port 2	I/O	Data bus	
13	D17/Port 1	I/O	Data bus	
14	D16/Port 0	I/O	Data bus	
15	D15	I/O	Data bus	
16	D14	I/O	Data bus	
17	Vss		GND	
18	Vcc		+3.3V source	
19	Vss		GND	
20	Vcc		+3.3V source	
21	D13	I/O	Data bus	
22	D12	I/O	Data bus	
23	D11	I/O	Data bus	
24	D10	I/O	Data bus	
25	D9	I/O	Data bus	
26	D8	I/O	Data bus	
27	D7	I/O	Data bus	
28	D6	I/O	Data bus	
29	D5	I/O	Data bus	
30	Vss		GND	
31	Vcc		+3.3V source	
32	D4	I/O	Data bus	
33	D3	I/O	Data bus	
34	D2	I/O	Data bus	
35	D1	I/O	Data bus	
36	D0	I/O	Data bus	
37	A0	O	Address bus	
38	A1	O	Address bus	
39	A2	O	Address bus	
40	A3	O	Address bus	
41	Vss		GND	
42	Vcc		+3.3V source	
43	A4	O	Address bus	
44	A5	O	Address bus	
45	A6	O	Address bus	
46	A7	O	Address bus	
47	A8	O	Address bus	
48	A9	O	Address bus	
49	Vss		GND	
50	Vcc		+3.3V source	
51	A10	O	Address bus	
52	A11	O	Address bus	
53	A12	O	Address bus	
54	Vss		GND	
55	Vcc		+3.3V source	
56	A13	O	Address bus	
57	A14	O	Address bus	

No.	Pin Name	Io/Out	Function	To/From
58	A15	O	Address bus	
59	Vss		GND	
60	Vcc		+3.3V source	
61	A16	O	Address bus	
62	A17	O	Address bus	
63	A18	O	Address bus	
64	A19	O	Address bus	
65	A20	O	Address bus	
66	A21	O	Address bus	
67	A22	O	Address bus	
68	Vss		GND	
69	Vcc		+3.3V source	
70	A23	O	Address bus	
71	A24	O	Address bus	
72	A25	O	Address bus	
73	Vss (PLL)		GND for PLL	
74	CAP1	O	Capacitor connecting terminal for PLL	
75	Vcc (PLL)		+3.3V source for PLL	
76	Vss		GND	
77	ONENB	I	ON Circuit enable signal	BGA288
78	Vcc		+3.3V source	
79	EXTAL	I	Oscillator in (10MHz)	X2
80	XTAL	O	Oscillator out (10MHz)	X2
81	TESTMDB	I	Test mode control	GND
82	Vss		GND	
83	Vcc		+3.3V source	
84	MD2 / RXD0	I	Data input of serial port 0	BGA288
85	MD1 / TXD0	I/O	Data output of serial port 0	BGA288
86	MD0 / SCK0	I/O	Not used	
87	BREQB	I	Bus request	BGA288
88	RESETB	I	Reset signal from BGA288	BGA288
89	NMI	I	Non-maskable Interrupt request	BGA288
90	IRL3B	I	Interrupt request	BGA288
91	RXD1	I	Data input of serial port 1	IC5(RS232C),BGA288
92	TXD1	O	Data output of serial port 1	IC5(RS232C),BGA288
93	SCK1	I/O	Clock of serial port 1	BGA288
94	CTS1	I	Serial port 1 transmission permission	IC5(RS232C)
95	RTS1	O	Serial port 1 transmission request	IC5(RS232C)
96	BACKB	O	Bus access permission	BGA288
97	IOIS16B	I	Write protect input	BGA288
98	STATUS0	O	STATUS0 signal to BGA288	BGA288
99	ONSTATUSB	O	V3ROM (+3.3V) ON/OFF control. H=ON	BGA288,Power supply unit
100	Vss		GND	
101	CKIO	I/O	System clock I/O	BGA288
102	Vcc		+3.3V source	
103	MD4 / CE2BB	I/O	PCMCIA CE2B signal	BGA288
104	MD3 / CE2AB	I/O	PCMCIA CE2A signal	BGA288
105	ONB	I	On circuit start request	BGA288
106	RD / WRB	O	Read/Write signal	BGA288,RAM,ROM
107	RDB	O	Read pulse	BGA288,ROM,LCD unit
108	CS6B / CE1BB	O	Chip select-6 sigmal	BGA288
109	CS5B / CE1AB	O	Chip select-5 sigmal	BGA288
110	CS4B	O	Chip select-4 sigmal	BGA288,ROM Board
111	CS3B	O	Not used	
112	CS2B	O	Chip select-2 sigmal	BGA288
113	CS1B	O	Chip select-1 sigmal	ROM Board
114	CS0B	O	Chip select-0 sigmal	ROM Board
115	Vss		GND	
116	Vcc		+3.3V source	
117	WE3B / ICIOWRB	O	D31-D24 select signal / IO Write	BGA288
118	WE2B / ICIORDB	O	D23-D16 select signal / IO Read	BGA288,ROM Board

No.	Pin Name	Io/Out	Function	To/From
119	CASHHB / CAS2HB	O	D31-D24 / D15-D8 select signal	BGA288,ROM Board
120	CASHLB / CAS2LB	O	D23-D16 / D7-D0 select signal	BGA288,ROM Board
121	Vss		GND	
122	Vcc		+3.3V source	
123	WE1B	O	D15-D8 select signal	BGA288
124	WE0B	O	D7-D0 select signal	BGA288,LCD uint,ROM Board
125	CASLHB	O	D15-D8 select signal	BGA288,ROM Board
126	CASLLB / OEB	O	D7-D0 select / memory select signal	BGA288,ROM Board
127	Vss		GND	
128	Vcc		+3.3V source	
129	RASB / CEB	O	CE signal for RAM,ROM	BGA288,RAM,ROM Board
130	MD5 / RAS2B		Not used	
131	HSTBYB	I	Not used	+3.3V source
132	WAITB	I	Hardware wait request	BGA288
133	Vss		GND	
134	RTCCLK	O	RTC clock output	BGA288
135	Vcc(RTC)		+3.3V source(for internal RTC)	
136	XTAL2	O	Oscillator terminal(for internal RTC)	C6
137	EXTAL2	I	Oscillator terminal(for internal RTC)	C6
138	Vss(RTC)		GND(for internal RTC)	
139	Vcc		+3.3V source	
140	D31	I/O	Data bus	
141	D30	I/O	Data bus	
142	D29	I/O	Data bus	
143	D28	I/O	Data bus	
144	Vss		GND	

MB87A915 (Gate Array/IC3)

No.	Pin Name	Volt	Io/Out	Function	To/From
1	CFCE1B	3v	O	CE signal for CompactFlash card	CompactFlash card
2	IOPORT0	3v	I/O	Not used	
3	IOPORT1	3v	I/O	I/O Port 1	LCD unit
4	VSS			GND	
5	V5D3	5V	I/O	Data bus	PCMCIA CARD
6	VS1			Voltage detect for PCMCIA	PCMCIA CARD
7	V5D4	5V	I/O	Data bus	PCMCIA CARD
8	V5D11	5V	I/O	Data bus	PCMCIA CARD
9	CD1B		I	PCMCIA CARD detect	PCMCIA CARD
10	V5D5	5V	I/O	Data bus	PCMCIA CARD
11	VDD1	5V		+5V source	
12	V5CE2B	5V	O	CE2 signal for PCMCIA CARD	PCMCIA CARD
13	V5D12	5V	I/O	Data bus	PCMCIA CARD
14	V5D6	5V	I/O	Data bus	PCMCIA CARD
15	V5D13	5V	I/O	Data bus	PCMCIA CARD
16	V5CE1B	5V	O	CE1 signal for PCMCIA CARD	PCMCIA CARD
17	V5A10	5V	O	Address bus	PCMCIA CARD
18	V5OEB	5V	O	OE signal for PCMCIA CARD	PCMCIA CARD
19	V5A11	5V	O	Address bus	PCMCIA CARD
20	VSS			GND	
21	VDD1	5V		+5V source	
22	VSS			GND	
23	V5IORDB	5V	O	IORD signal for PCMCIA CARD	PCMCIA CARD
24	V5A9	5V	O	Address bus	PCMCIA CARD
25	V5IOWRB	5V	O	IOWR signal for PCMCIA CARD	PCMCIA CARD
26	V5A8	5V	O	Address bus	PCMCIA CARD
27	V5A17	5V	O	Address bus	PCMCIA CARD
28	V5A13	5V	O	Address bus	PCMCIA CARD
29	V5A18	5V	O	Address bus	PCMCIA CARD
30	V5A14	5V	O	Address bus	PCMCIA CARD
31	VDD1	5V		+5V source	
32	V5A19	5V	O	Address bus	PCMCIA CARD
33	V5WEB	5V	O	WE signal for PCMCIA CARD	PCMCIA CARD
34	V5A20	5V	O	Address bus	PCMCIA CARD
35	V5A21	5V	O	Address bus	PCMCIA CARD
36	V5A16	5V	O	Address bus	PCMCIA CARD
37	VSS			GND	
38	V5A22	5V	O	Address bus	PCMCIA CARD
39	V5A15	5V	O	Address bus	PCMCIA CARD
40	VDD1	5V		+5V source	
41	V5A23	5V	O	Address bus	PCMCIA CARD
42	V5A12	5V	O	Address bus	PCMCIA CARD
43	V5A24	5V	O	Address bus	PCMCIA CARD
44	V5A7	5V	O	Address bus	PCMCIA CARD
45	VDD1	5V		+5V source	
46	VSS			GND	
47	V5A25	5V	O	Address bus	PCMCIA CARD
48	V5A6	5V	O	Address bus	PCMCIA CARD
49	V5A5	5V	O	Address bus	PCMCIA CARD
50	V5RESET	5V	O	Reset signal for PCMCIA CARD	PCMCIA CARD
51	V5A4	5V	O	Address bus	PCMCIA CARD
52	V5A3	5V	O	Address bus	PCMCIA CARD
53	V5A2	5V	O	Address bus	PCMCIA CARD
54	V5REGB	5V	O	Attribute memory select	PCMCIA CARD
55	VDD1	5V		+5V source	
56	V5D7	5V	I/O	Data bus	PCMCIA CARD
57	V5D14	5V	I/O	Data bus	PCMCIA CARD
58	V5A1	5V	O	Address bus	PCMCIA CARD
59	V5D15	5V	I/O	Data bus	PCMCIA CARD

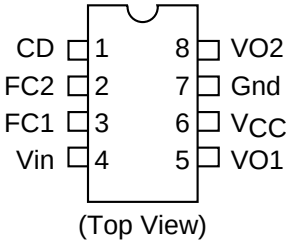
No.	Pin Name	Volt	Io/Out	Function	To/From
60	V5D0	5V	I/O	Data bus	PCMCIA CARD
61	V5A0	5V	O	Address bus	PCMCIA CARD
62	VDD1	5V		+5V source	
63	V5D8	5V	I/O	Data bus	PCMCIA CARD
64	V5D1	5V	I/O	Data bus	PCMCIA CARD
65	V5D9	5V	I/O	Data bus	PCMCIA CARD
66	V5BSYB	5V	I	Busy/Ready signal for PCMCIA CARD	PCMCIA CARD
67	VSS			GND	
68	VSS			GND	
69	V5WAITB	5V	I	Wait signal for PCMCIA CARD	PCMCIA CARD
70	V5D2	5V	I/O	Data bus	PCMCIA CARD
71	V5INPACKB	5V	I	Input response	PCMCIA CARD
72	V5D10	5V	I/O	Data bus	PCMCIA CARD
73	V5BVD2	5V	I	Voltage detect for PCMCIA	PCMCIA CARD,SP
74	LEDONB	3V	O	LED signal	LCD unit
75	PIRB	3V	O	Voltage V5IRDA(3V) control	Q123(Power)
76	V5BVD1	5V	I	Battery Detector	PCMCIA CARD
77	V5IOIS16B	5V	I	Write protect	PCMCIA CARD
78	IRTXD	3V	O	Infrared output	IrDA
79	CD2B	3V	I	Card detect	PCMCIA CARD
80	IRRXD	3V	I	Infrared input	IrDA
81	VDD2	3V		+3V source	
82	VSS			GND	
83	DISPOFFB	3V	O	LCD off signal	LCD unit
84	DISPCSB	3V	O	CE signal for LCD driver	LCD unit
85	DISPRSTB	3V	O	Reset signal for LCD driner	LCD unit
86	DISPWTB	3V	I	Wait signal from LCD driver	LCD unit
87	IOPORT2	3V	I/O	Not used	
88	PSW0	3V	O	Touch panel control	Touch panel
89	PSW1	3V	O	Touch panel control	Touch panel
90	PSW2	3V	O	Touch panel control	Touch panel
91	PSW3	3V	O	Touch panel control	Touch panel
92	PSW4	3V	O	Touch panel control	Touch panel
93	FLSHRSTB	3V	O	Reset signal for Flash	ROM board
94	PMUTE	3V	O	Audio mute signal	Audio amp
95	PRECB	3V	O	Power supply control for recording circuit	LCD unit
96	FUNKEYIN7	3V	I	Function input	Keyboard
97	FUNKEYIN6	3V	I	Function input	Keyboard
98	FUNKEYIN5	3V	I	Function input	Keyboard
99	FUNKEYIN4	3V	I	Function input	Keyboard
100	FUNKEYIN3	3V	I	Function input	Keyboard
101	FUNKEYIN2	3V	I	Function input	Keyboard
102	FUNKEYIN1	3V	I	Function input	Keyboard
103	NC			Not used	
104	AVCC3	Analog	I	+3V source for D/A converter of audio	+3V source
105	AUDIN	Analog	I	Audio signal input for record	LCD unit
106	AUDVRL	Analog	I	Reference voltage for A/D,D/A converters	
107	AUDOUT	Analog	O	Audio signal output for play	Audio amp
108	AUDVRH	Analog	I	Reference voltage for A/D,D/A converters	
109	AVCC2	Analog	I	+3V source for Touch panel	+3V source
110	AGND2	Analog	I	Ground for Touch panel	GND
111	AGND1	Analog	I	Analog ground	GND
112	AVCC1	Analog	I	+3V source for D/A converter of audio	+3V source
113	TCPIN2	Analog	I	Analog signal input from Touch panel	Touch panel
114	VDETADIN	Analog	I	Power detecting signal	Power supply
115	TCPVRL	Analog	I	Reference voltage for A/D converter of TP	
116	TCPVRH	Analog	I	Reference voltage for A/D converter of TP	
117	TCPIN1	Analog	I	Analog signal input from Touch panel	Touch panel
118	NC			Not used	
119	FUNKEYIN0	3V	I	Function input	Keyboard
120	KBOUT8	3V	O	Key common signal	Keyboard

No.	Pin Name	Volt	Io/Out	Function	To/From
121	KBOUT7	3V	O	Key common signal	Keyboard
122	KBOUT6	3V	O	Key common signal	Keyboard
123	KBOUT5	3V	O	Key common signal	Keyboard
124	KBOUT4	3V	O	Key common signal	Keyboard
125	KBOUT3	3V	O	Key common signal	Keyboard
126	KBOUT2	3V	O	Key common signal	Keyboard
127	KBOUT1	3V	O	Key common signal	Keyboard
128	KBOUT0	3V	O	Key common signal	Keyboard
129	KBDIN0	3V	I	Key input signal	Keyboard
130	KBDIN1	3V	I	Key input signal	Keyboard
131	KBDIN2	3V	I	Key input signal	Keyboard
132	KBDIN3	3V	I	Key input signal	Keyboard
133	KBDIN4	3V	I	Key input signal	Keyboard
134	KBDIN5	3V	I	Key input signal	Keyboard
135	KBDIN6	3V	I	Key input signal	Keyboard
136	VSS			GND	
137	KBDIN7	3V	I	Key input signal	Keyboard
138	XCKIN	Analog	I	Oscillator input(3.68MHz)	X1
139	XCKOUT	Analog	I/O	Oscillator output(3.68MHz)	X1
140	VDD2	3V		+3V source	
141	ONSWB	3V	I	ON switch signal	Keyboard
142	PENPUTB	3V	I	Pen down status signal	Touch panel
143	LEDOFFB	3V	I	LED cancel signal	LCD unit (SW)
144	DOCKB	3V	I	Cradle detector	RS232C
145	CHGDTCT	3V	I		Power supply
146	ACLB	3V	I	ACL signal at battery loaded.	IC113(Power supply)
147	BCVRB	3V	I	Battery cover detecting port	SW100
148	BATDTCT	3V	I	Alkaline/NiMH detecting port	SW101
149	ACDTCTB	3V	I	AC adaptor detect port	Q105 (Power supply)
150	VDETS	3V	I	Backup battery detecting signal	Q119 (Power supply)
151	VDTC5B	3V	I	Alkaline battery detecting signal	IC109 (Power supply)
152	VDTC3B	3V	I	Alkaline battery detecting signal	IC110 (Power supply)
153	VDET3B	3V	I	Alkaline battery detecting signal	IC107 (Power supply)
154	VDET2R	3V	I	NiMH detecting signal(Off)	Q100 (Power supply)
155	VDET2	3V	I	Alkaline battery detecting signal(Off)	Q103 (Power supply)
156	VDET1RB	3V	I	NiMH detecting signal(Low Battery)	IC101 (Power supply)
157	VDET1B	3V	I	Alkaline battery detecting signal(Low Battery)	IC100 (Power supply)
158	PSEL5	3V	O	Power supply select signal for PCMCIA (3/5V)	Q113 (Power supply)
159	PLCD	3V	O	LCD Voltage control signal	Q201 (I/F Block)
160	PEL	3V	O	EL Voltage control signal	Q116 (Power supply)
161	PDMMYS	3V	O	For backup battery detector	IC115 (Power supply)
162	PDMMYM	3V	O	V3 system control signal	Q112 (Power supply)
163	PCRD2	3V	O	VGA288 Voltage control signal	Q118 (Power supply)
164	PCRD	3V	O	PCMCIA Voltage control signal	Q117 (Power supply)
165	P5DCHG	3V	O	V5 Voltage control signal	Q115 (Power supply)
166	P5V	3V	O	V5 Voltage control signal	Q107,Q111 (Power supply)
167	P25ON	3V	O	LCD(+25V) Voltage control signal	IC201
168	EVOLDAT	3V	O	Electronic volume (DAT)	IC202 (EVOL)
169	EVOLDIR	3V	O	Electronic volume (DIR)	IC202 (EVOL)
170	EVOLCS	3V	O	Electronic volume (CS)	IC202 (EVOL)
171	EVOLCLK	3V	O	Electronic volume (CLK)	IC202 (EVOL)
172	CAS1HUB	3V	O	CAS signal for DRAM	DRAM
173	CAS1HLB	3V	O	CAS signal for DRAM	DRAM
174	CAS1LUB	3V	O	CAS signal for DRAM	DRAM
175	CAS1LLB	3V	O	CAS signal for DRAM	DRAM
176	CAS0HUB	3V	O	CAS signal for DRAM	DRAM
177	CAS0HLB	3V	O	CAS signal for DRAM	DRAM
178	CAS0LUB	3V	O	CAS signal for DRAM	DRAM
179	VSS			GND	
180	VDD2	3V		+3V source	
181	CAS0LLB	3V	O	CAS signal for DRAM	DRAM

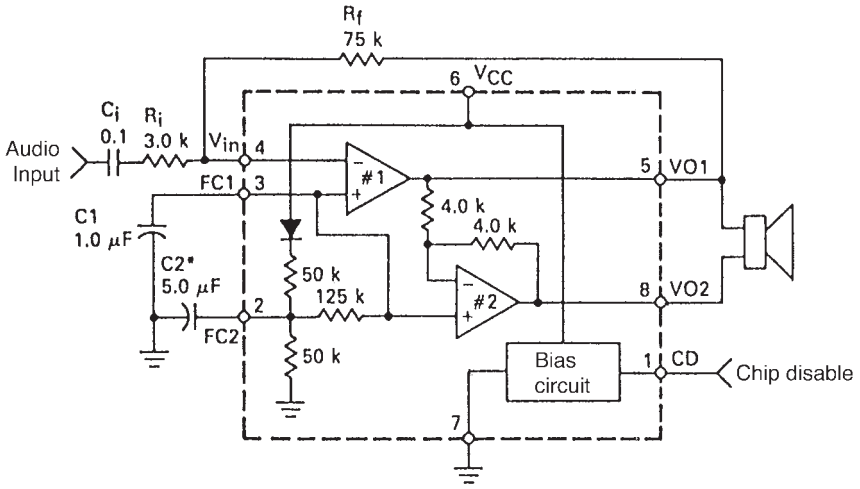
No.	Pin Name	Volt	Io/Out	Function	To/From
182	LOCK	3V	I	Not used	
183	MEMCLB	3V	I	Not used	
184	A25	3V	I	Address bus	
185	A24	3V	I	Address bus	
186	A23	3V	I/O	Address bus	
187	A22	3V	I/O	Address bus	
188	A21	3V	I/O	Address bus	
189	A20	3V	I/O	Address bus	
190	A19	3V	I	Address bus	
191	A18	3V	I	Address bus	
192	A17	3V	I	Address bus	
193	A16	3V	I	Address bus	
194	A15	3V	I	Address bus	
195	A14	3V	I	Address bus	
196	A13	3V	I	Address bus	
197	A12	3V	I	Address bus	
198	A11	3V	I/O	Address bus	
199	A10	3V	I/O	Address bus	
200	A9	3V	I/O	Address bus	
201	A8	3V	I/O	Address bus	
202	A7	3V	I/O	Address bus	
203	VSS			GND	
204	A6	3V	I/O	Address bus	
205	A5	3V	I/O	Address bus	
206	A4	3V	I/O	Address bus	
207	VDD2	3V		+3V source	
208	A3	3V	I/O	Address bus	
209	A2	3V	I/O	Address bus	
210	A1	3V	I	Address bus	
211	A0	3V	I	Address bus	
212	D0	3V	I/O	Data bus	
213	D1	3V	I/O	Data bus	
214	D2	3V	I/O	Data bus	
215	D3	3V	I/O	Data bus	
216	D4	3V	I/O	Data bus	
217	D5	3V	I/O	Data bus	
218	VDD2	3V		+3V source	
219	VSS			GND	
220	D6	3V	I/O	Data bus	
221	D7	3V	I/O	Data bus	
222	D8	3V	I/O	Data bus	
223	D9	3V	I/O	Data bus	
224	D10	3V	I/O	Data bus	
225	D11	3V	I/O	Data bus	
226	D12	3V	I/O	Data bus	
227	D13	3V	I/O	Data bus	
228	D14	3V	I/O	Data bus	
229	D15	3V	I/O	Data bus	
230	MCLOCK	3V	I	CKIO signal from CPU	IC1
231	ONENB	3V	O	ON Circuit enable signal	IC1
232	RXD0	3V	O	Data output of serial port 0	IC1
233	TXD0	3V	I	Data input of serial port 0	IC1
234	BREQB	3V	O	REQ signal to CPU	IC1
235	RESETB	3V	O	RESET signal to CPU	IC1
236	VSS			GND	
237	IRQB	3V	O	IRQ signal to CPU	IC1
238	RXDSH	3V	I/O	Data output of signal port 1	IC5(RS232C),BGA288
239	TXDSH	3V	I	Data input of serial port 1	BGA288
240	SCK	3V	O	Clock of serial port 1	IC1
241	BACKB	3V	I	Bus access permission from CPU	IC1
242	IOIS16B	3V	O	Write protect signal to CPU	IC1

No.	Pin Name	Volt	Io/Out	Function	To/From
243	STATUS0	3V	I	STATUS0 signal from CPU	IC1
244	ONSTATUSB	3V	I	ONSTATUS signal from CPU	IC1
245	CE2B	3V	I	CE2B signal from CPU	IC1
246	CE2A	3V	I	CE2A signal from CPU	IC1
247	VDD2	3V		+3V source	
248	ONB	3V	O	ON circuit start signal to CPU	IC1
249	RDWRB	3V	I/O	Read/Write signal from CPU	IC1
250	RDB	3V	I	Read pulse signal from CPU	IC1
251	CS6B	3V	I	Chip select-6 signal from CPU (PCMCIA)	IC1
252	CS4B	3V	I	Chip select-4 signal from CPU (HOTARU)	IC1
253	CS2B	3V	I	Chip select-2 signal from CPU (LCD Driver)	IC1
254	CS5B	3V	I	Chip select-5 signal from CPU	IC1
255	ICIOWRB	3V	I	IOWR signal from CPU	IC1
256	ICIORDB	3V	I	IORD signal from CPU	IC1
257	CASHHB	3V	I	CASHH signal from CPU	IC1
258	CASHLB	3V	I	CASHL signal from CPU	IC1
259	WRHB	3V	I	WE1 signal from CPU	IC1
260	WRLB	3V	I	WE0 signal from CPU	IC1
261	CASLHB	3V	I	CASLH signal from CPU	IC1
262	CASLLB	3V	I	CASLL signal from CPU	IC1
263	RASB	3V	I/O	RAS/CE signal from CPU	IC1
264	HSTBY	3V	O	HSTBY signal to CPU	IC1
265	WAITB	3V	O	WAIT signal to CPU	IC1
266	CKRTC256	3V	I	RTC clock signal from CPU	IC1
267	CFCVRB	3V	I	Compact Flash lock switch	SW1
268	CFWEB	3V	O	WE signal for CompactFlash card	CompactFlash card
269	CFWAITB	3V	I	Wait signal for CompactFlash card	CompactFlash card
270	CFVS1	3V	I	Voltage detect for CompactFlash card	CompactFlash card
271	CFRESET	3V	O	Reset signal for CompactFlash card	CompactFlash card
272	CFREGB	3V	O	REG signal for CompactFlash card	CompactFlash card
273	CFRDY	3V	I	RDY/BSY signal for CompactFlash card	CompactFlash card
274	CFOEB	3V	O	OE signal for CompactFlash card	CompactFlash card
275	CFCD2	3V	I	CompactFlash card detector	CompactFlash card
276	CFCD1	3V	I	CompactFlash card detector	CompactFlash card
277	VSS			GND	
278	CFCE2B	3V	O	CE2 signal for CompactFlash card	CompactFlash card
279	TEST3	3V	I	Not used	GND
280	TEST2	3V	I	Not used	GND
281	TEST1	3V	I	Not used	GND
282	DTYPE64	3V	I	Not used	
283	SIFSHUTB	3V	O	RXD1 signal for CPU	IC5 (RS232C)
284	SIFENB	3V	O	9-pin RXD1 control	IC5 (RS232C)
285	MDTR	3V	O	RS232C control signal	IC5 (RS232C)
286	MDCD	3V	I	RS232C control signal	IC5 (RS232C)
287	TXDB	3V	O	3-pin TXD signal	3pin JACK
288	RXDB	3V	I	3-pin RXD signal	3pin JACK

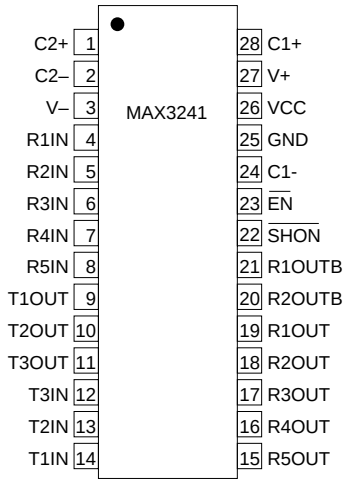
MC34119 (IC9)



(Top View)



MAX3241CAI (IC5)



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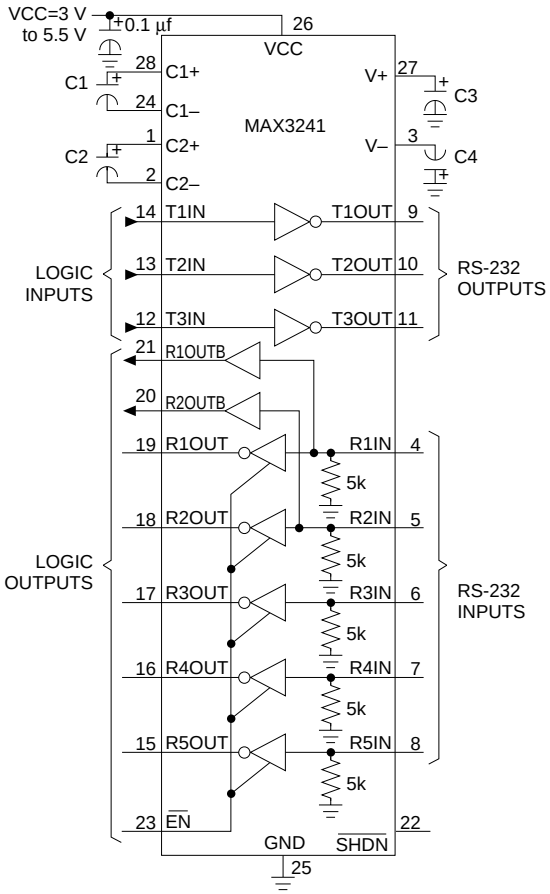
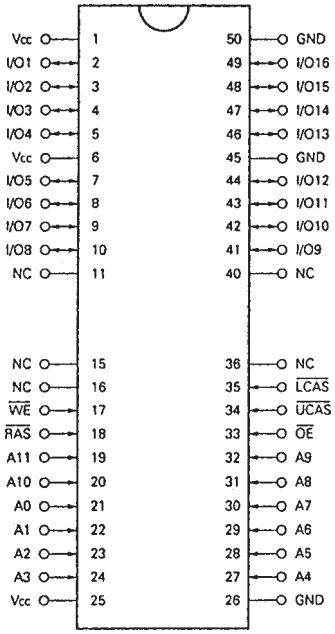
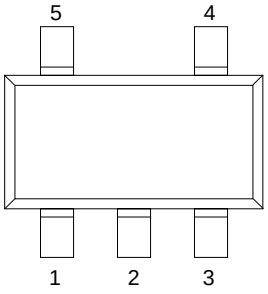


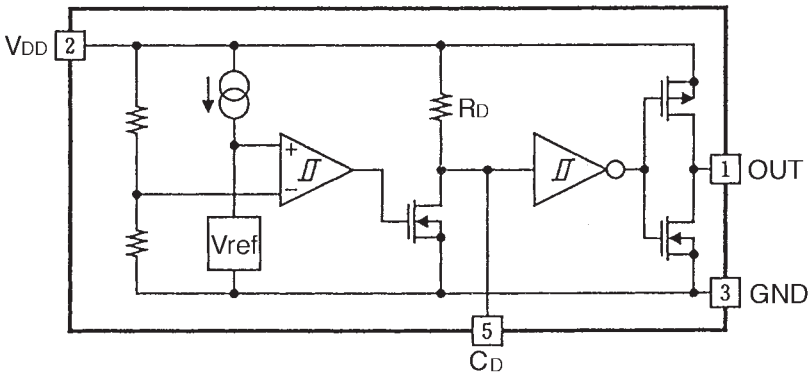
UPD42S16160LG5



A0 to A11	: Address Inputs
I/O 1 to I/O 16	: Data Inputs/Outputs
$\overline{RAS}$	: Row Address Strobe
$\overline{UCAS}$	: Column Address Strobe (upper)
$\overline{LCAS}$	: Column Address Strobe (lower)
$\overline{WE}$	: Write enable
$\overline{OE}$	: Output enable
VCC	: Power Supply
GND	: Ground
NC	: No Connection

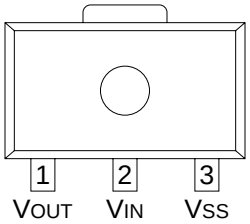
RN5VD18CA (IC113)

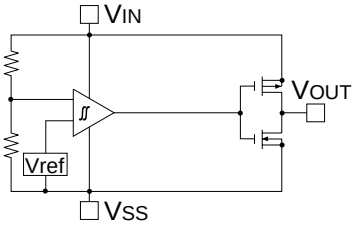




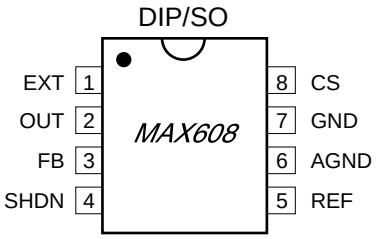
OUT : Output (H=Detected)
VDD : Voltage source
GND : Ground
NC : No connection
CD : Connect to capacitor for delay

XC61A Series (IC100 ~ IC103,IC107,IC109,IC110,IC112)



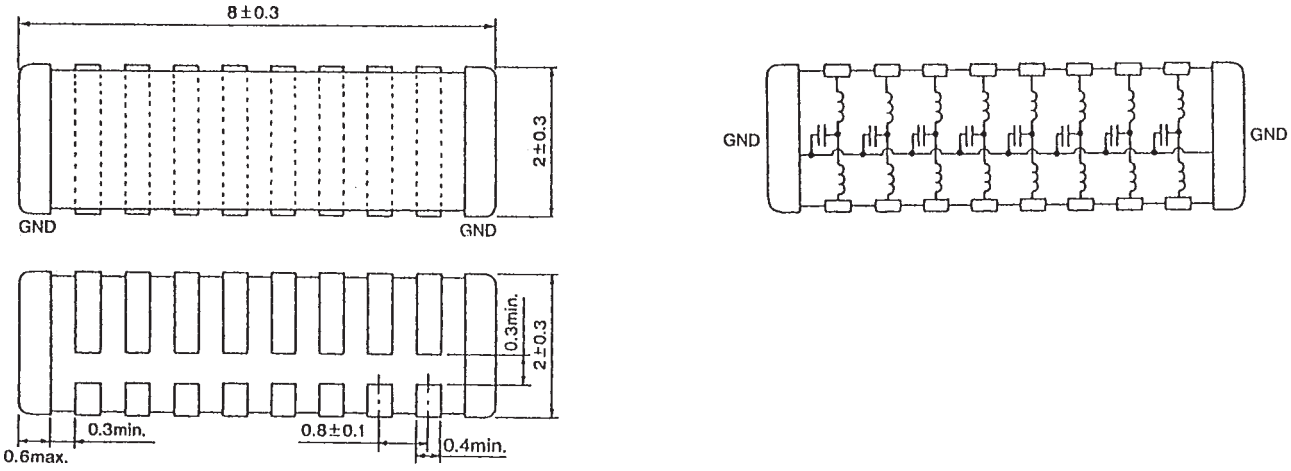


MAX608 (IC105,IC106)

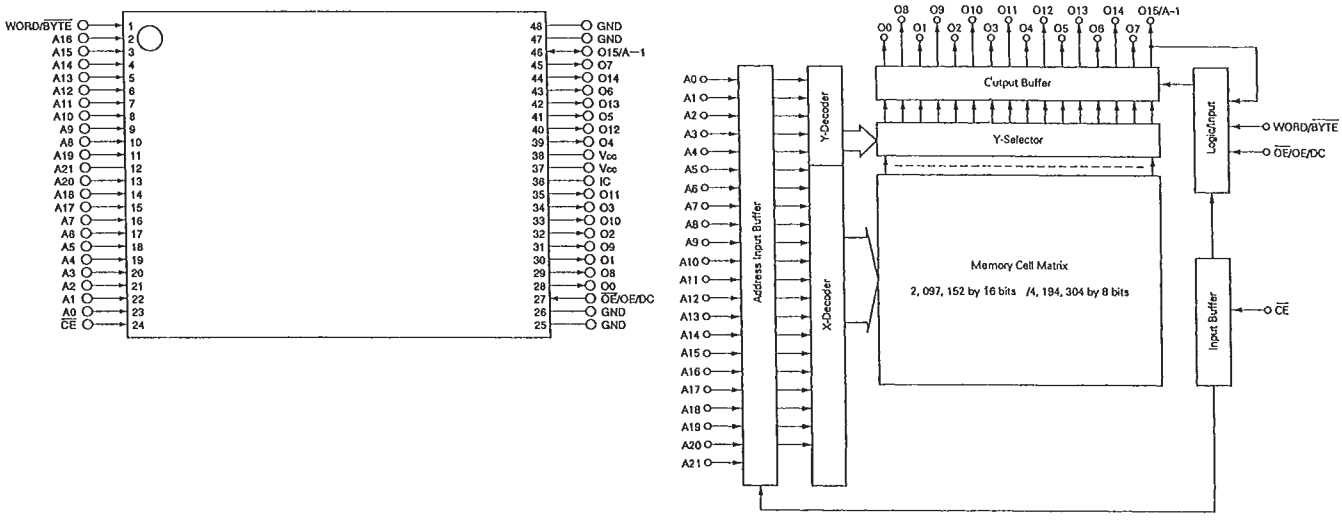


(Top View)

EMI FILTER ARRAY

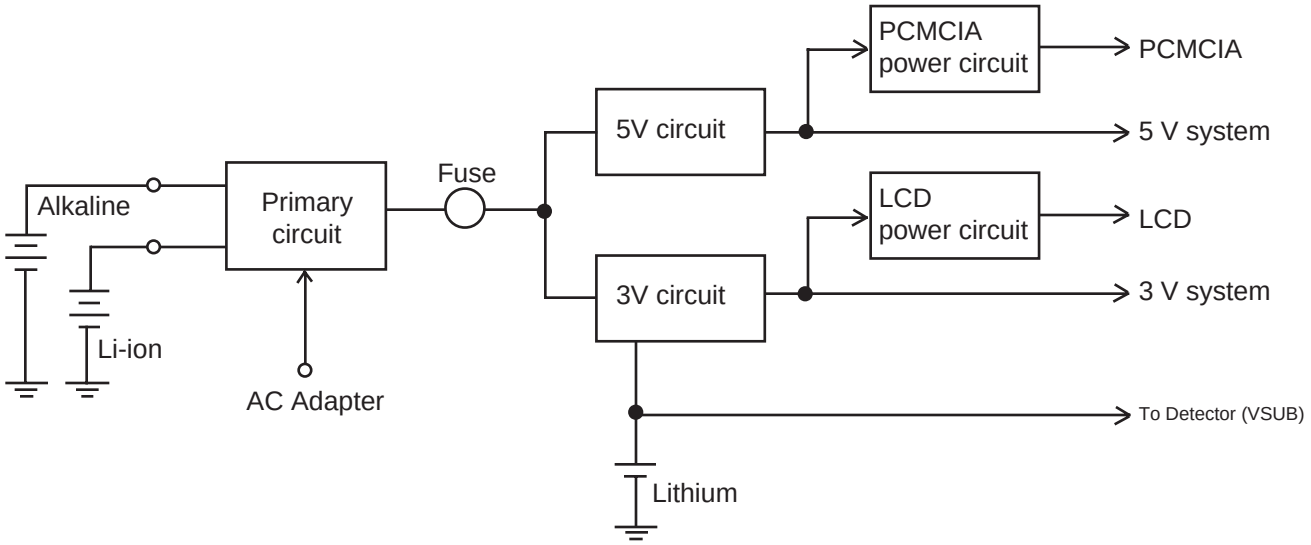


UPD23C32000LGY



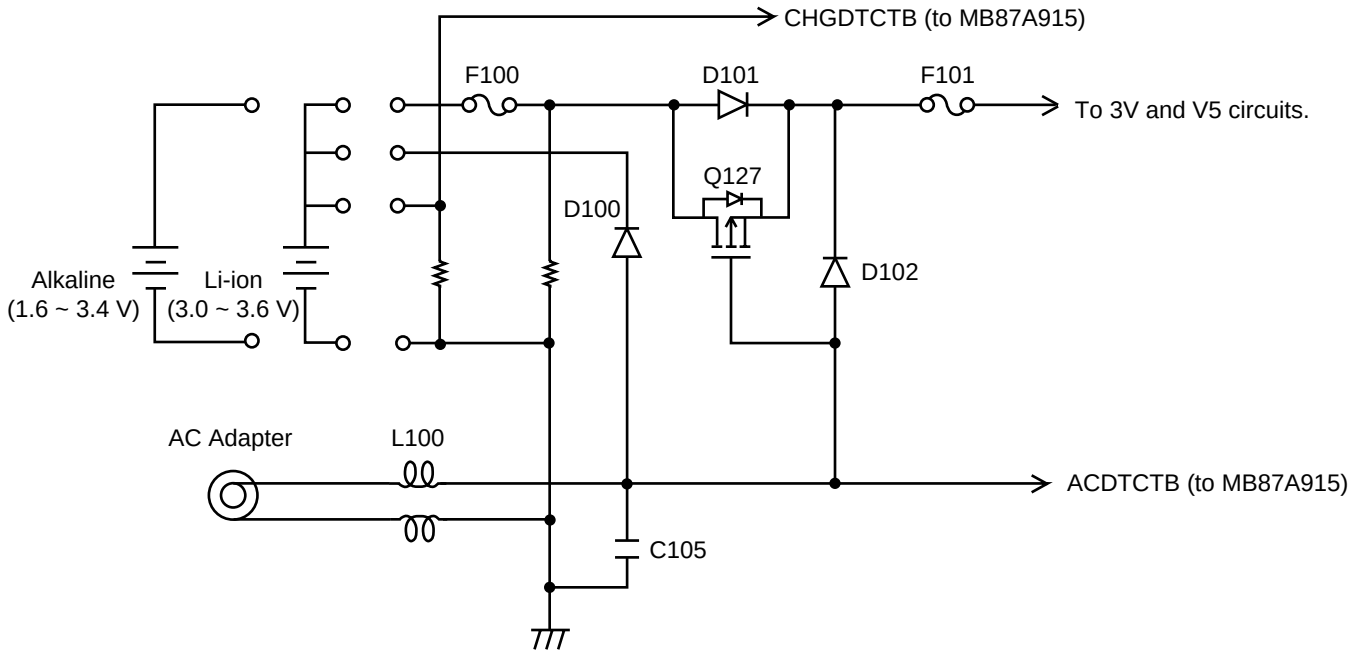
POWER SUPPLY CIRCUIT

The power supply circuit consists of 5 blocks which are Primary circuit, 5 V circuit, 3 V circuit , PCMCIA power circuit and LCD power circuit as follows;



Primary Circuit

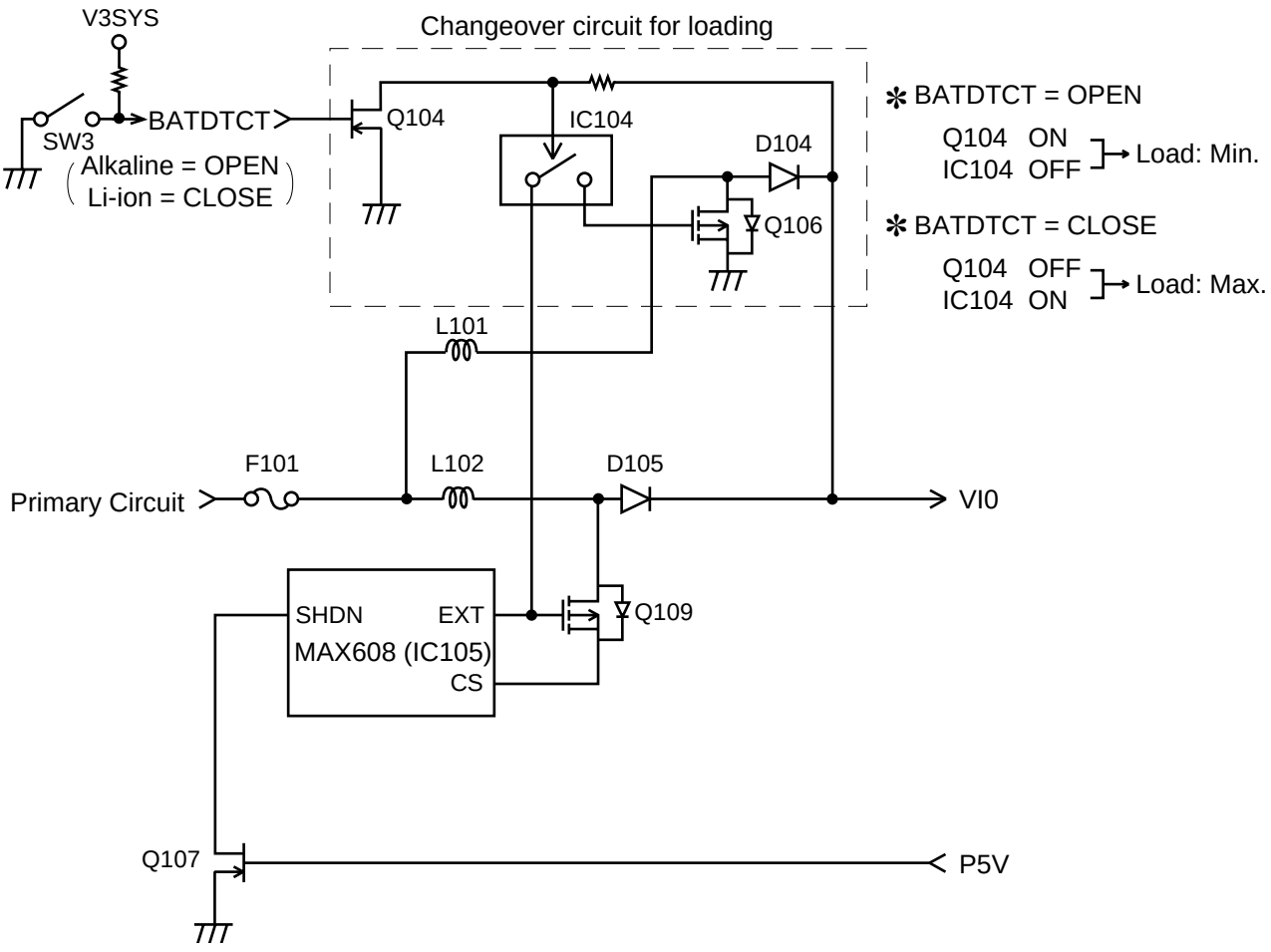
The voltages from both batteries, alkaline and Li-ion, apply to V5 and V3 circuits through the fuse when the batteries is loaded.
CHGDTCTB is for Li-ion detect. When Li-ion is full charged CHGDTCTB becomes L.
ACDTCTB is for AC adapter detector. It detects whether AC adapter is used or not. When AC adapter is used ACDTCTB becomes L.



5 V Circuit

DC/DC converter MAX608ESA (IC105) generates +5.11 V and it makes up 5 V system.

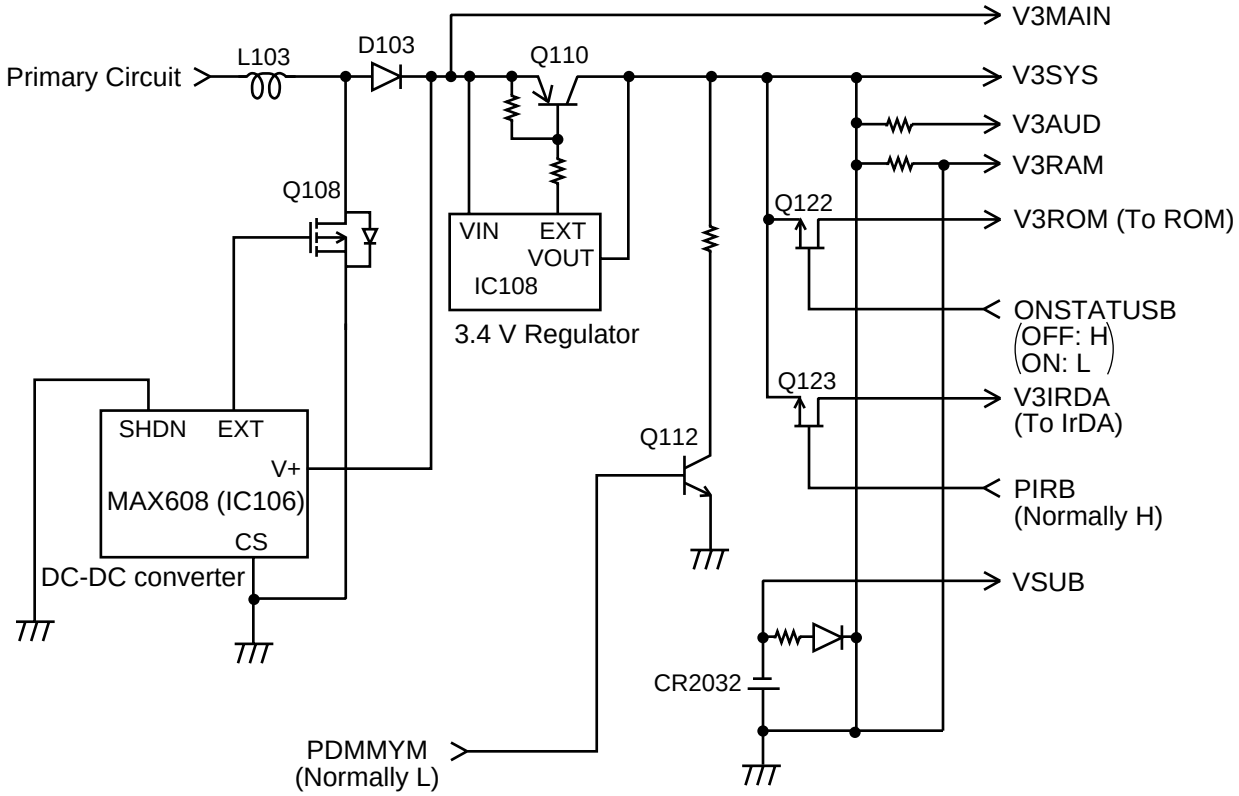
VIO :	+5 V source for 3-pin jack and LCD power block.
BATDTCT:	It distinguishes alkaline and Li-ion to change the load according to the battery. When alkaline is used, it is H. When Li-ion, it is L.
P5V :	Controls ON/OFF of DC-DC converter (IC105). From pin 166 of MB87A915.



3 V Circuit

DC/DC converter MAX608ESA (IC106) generates +3.77 V and it makes up 3 V system.

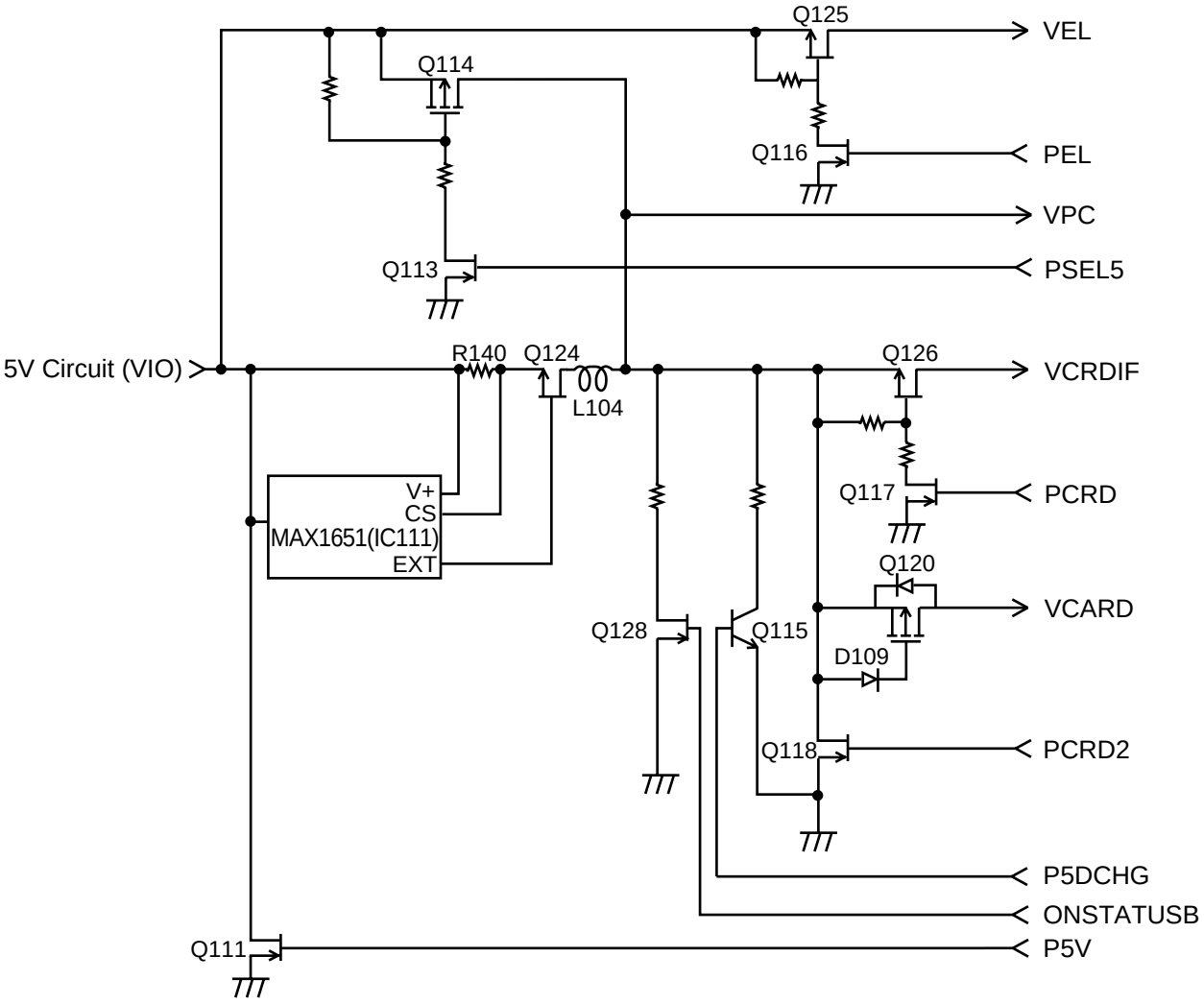
V3MAIN :	The reference voltage for the detector.
V3SYS :	+3.4 V source for IC1,IC3,IC5.
V3RAM :	+3.4 V source for DRAM (RAM5 ~ RAM8).
V3ROM :	+3.4 V source for ROM (U301,U302).
ONSTATUSB :	Controls ON/OFF of V3ROM. From pin 99 of CPU.
V3IRDA :	+3.4 V source for IrDA Transceiver CIM-10S (IC4).
PIRB :	Controls ON/OFF of V3IRDA. From pin 75 of MB87A915 (IC3).
VSUB :	+2.7 V source for detecting memory backup battery.
V3AUD :	+3.4 V source for MB87A195 (IC3).
PDMMYM :	Controls ON/OFF of the load at detecting voltage.



PCMCIA Circuit

DC/DC converter MAX1651 (IC111) generates 3.4 V

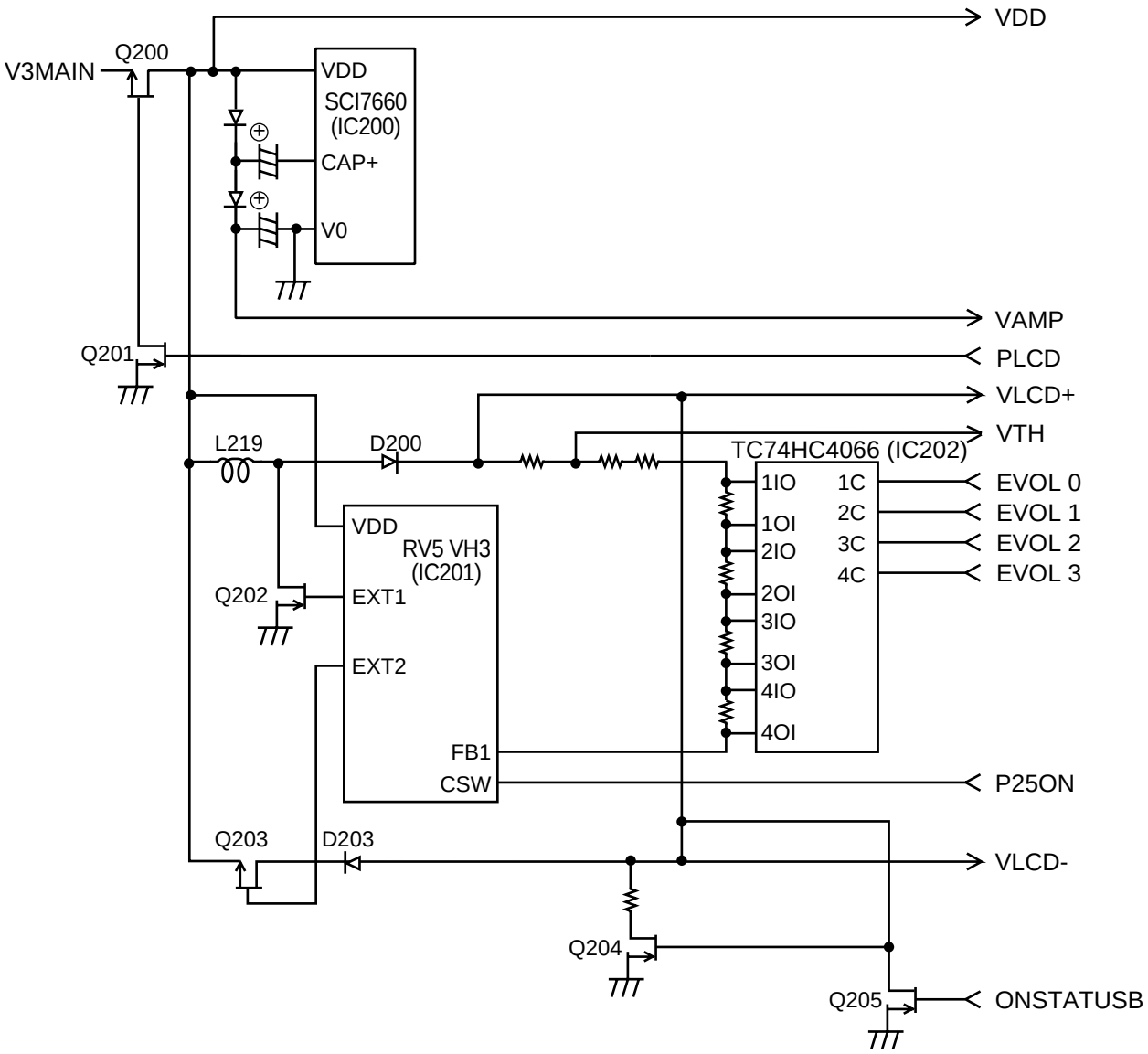
VEL :	5.11 V source for LCD unit.
PEL :	Controls ON/OFF of VEL. From pin 160 of MB87A915 (IC3).
VPC :	3.4 V or 5.11 V source for detecting PCMCIA power.
PSEL5 :	Power supply select signal for PCMCIA (H=5 V, L=3 V).
VCRDIF :	3.4 V or 5.11 V source for MB87A915 (IC3).
PCRD :	Controls ON/OFF of VCRDIF, From pin 164 of MB87A915 (IC3).
VCARD :	3.4 V or 5.11 V source for PCMCIA connector.
PCRD2 :	Controls ON/OFF of VCARD. From pin 163 of MB87A915 (IC3).
P5DCHG :	VCRDIF control signal.
ONSTATUSB :	VCRDIF control signal.
P5V :	Controls ON/OFF of VPC. From pin 166 of MB87A915 (IC3).



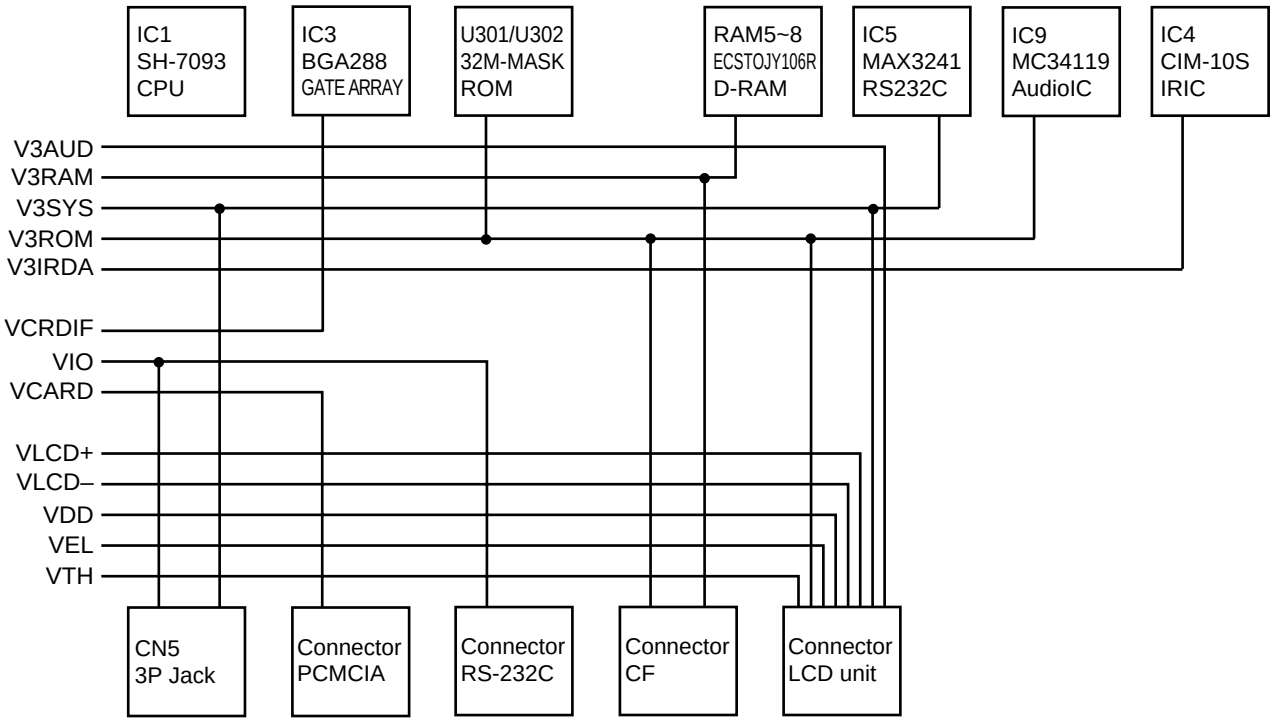
LCD power Circuit

DC/DC converter RN5VH3 (IC201) generates LCD power and it makes up LCD power system for LCD.

VDD :	+3.7 V source for LCD unit.
VAMP :	+7.0 V source for LCD unit.
PLCD :	Controls ON/OFF of VAMP. From pin 159 of MB87A915 (IC3).
VLCD+:	+15.5 V source for LCD unit.
VTH :	LCD power source for LCD unit.
EVOL 0-3 :	LCD status.
P25ON :	Controls ON/OFF of LCD power. From pin 167 of MB87A915 (IC3).
VLCD- :	-10.0 V source for LCD unit.
ONSTATUSB :	Controls ON/OFF of LCD power. From pin 99 of CPU (IC1).



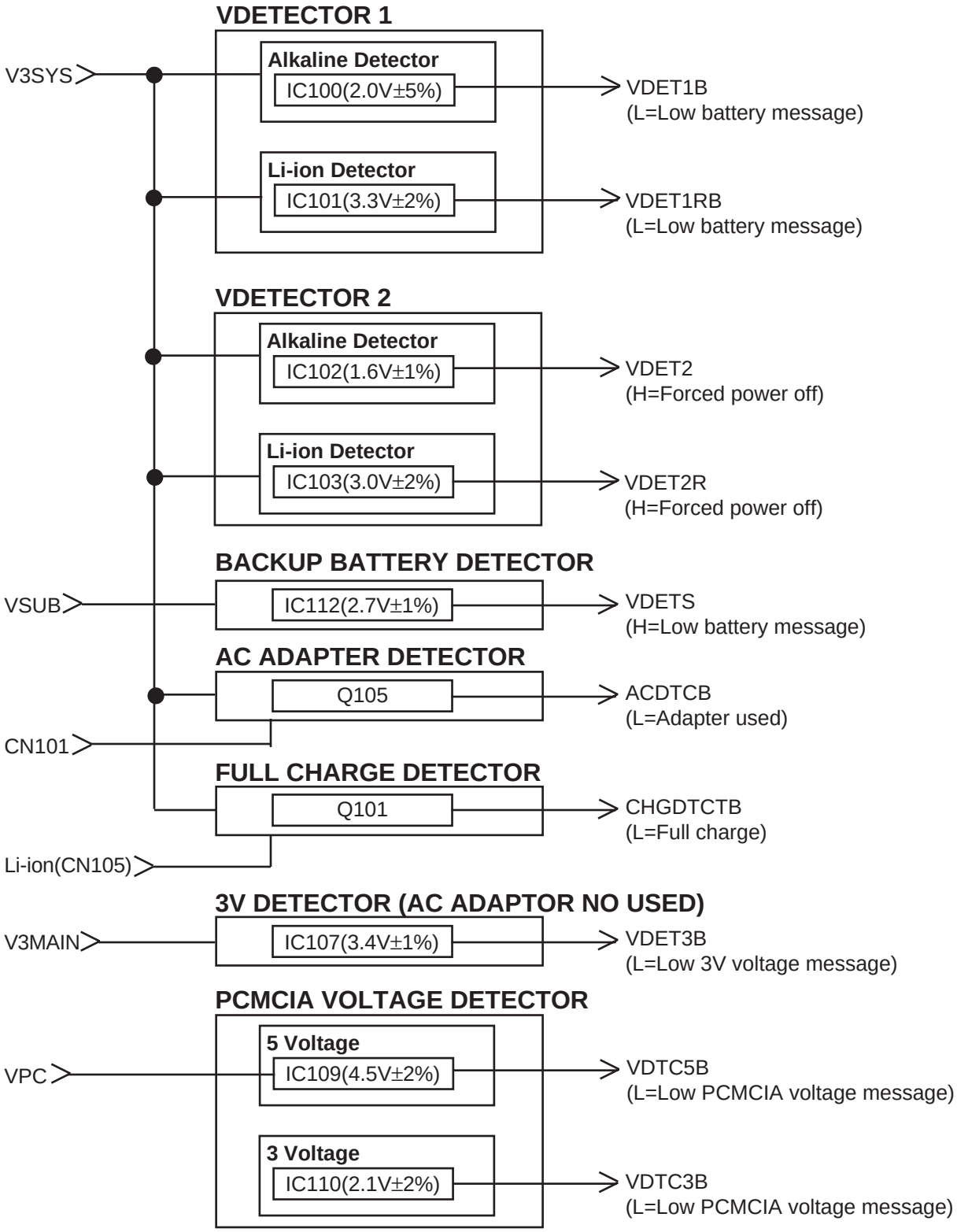
Voltage Line



DETECTOR CIRCUIT

The detector circuit consistes of 7 blocks as follows;

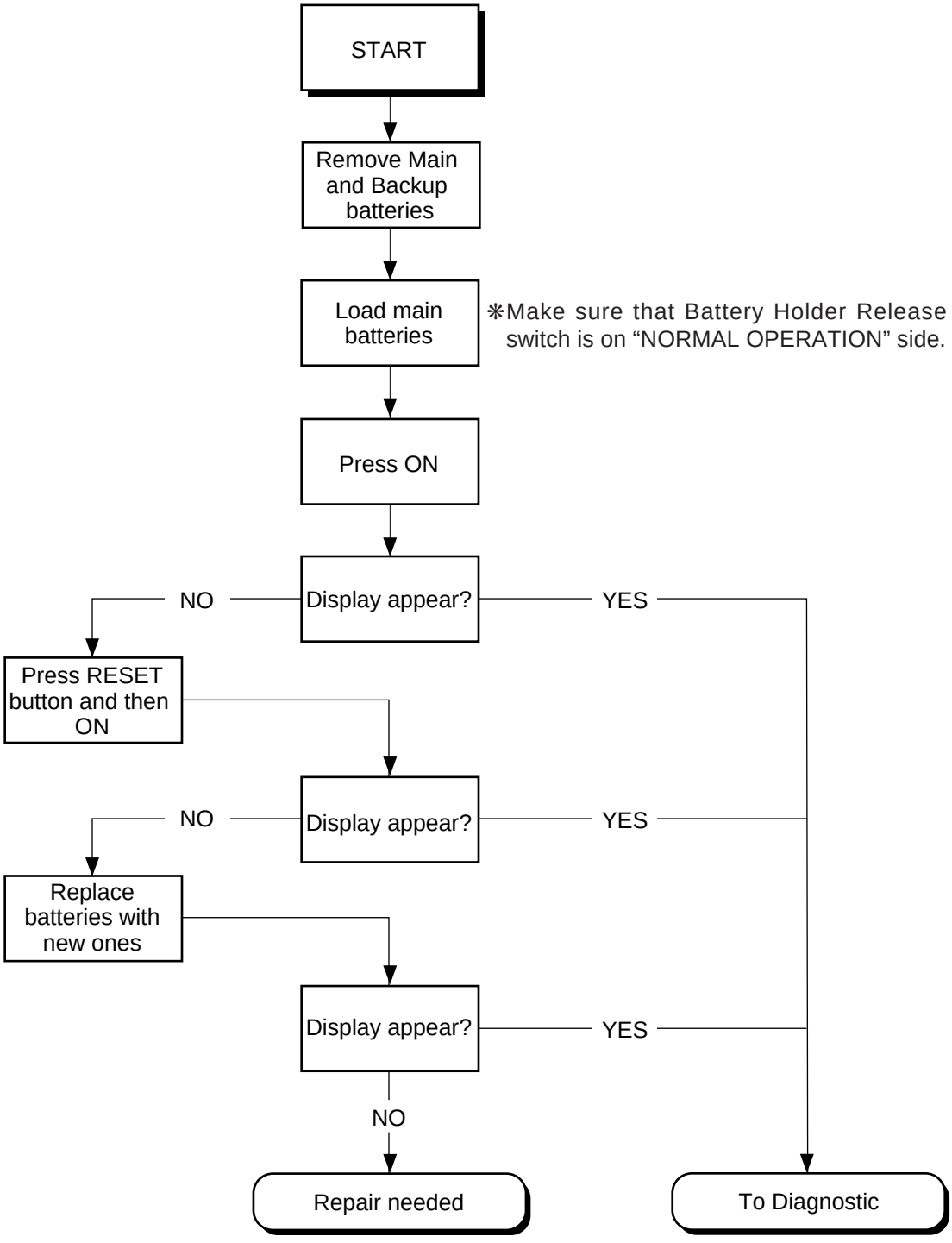
1 : VDETECTOR1 (Alkaline and Li-ion)
2 : VDETECTOR2 (Alkaline and Li-ion)
3 : Backup battery detector
4 : AC Adaptor detector
5 : Full charge detector
6 : 3V detector (AC adaptor is not used)
7 : PCMCIA voltage detector



DIAGNOSTIC PROGRAM

Introduction

The following steps must be followed before diagnostics.



OPERATION CHECK

Preparation

1 : A-20
2 : Alkaline batteries
3 : Jigs of RS-JIG-232C and RS-JIG-3PIN
4 : RAM Card XC-110
5 : AC-adapter
6 : Charger
7 : Rechargeable battery pack
8 : Diagnostic program (Diag 340.EXE)

Notes: • Be sure to keep separate back-up copies of all important data in A-20, because the DISGNOSTICS make data corrupt.

• Diag 340 EXE. (Program is included in CD-ROM(Service Information Disc) with Service Manual A-20)

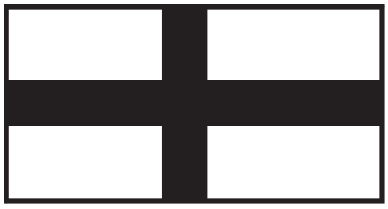
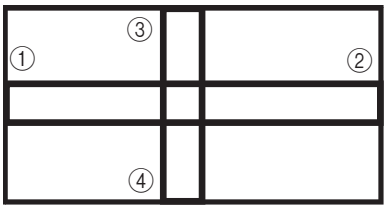
• When using alkaline batteries use new ones.

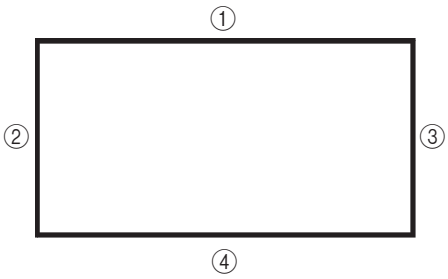
• After all inspections are done perform Full Reset.
(After performing Full Reset make sure Diag 340. EXE is not in the computer.)

Step	Operation	Display	Note
1	Turn power on. Operate full Reset (refer to P12).	Picture of sky with sun and clouds. Wait for about 10 seconds. HP/C Setup Wizard Introduction	Before turning the power on be sure to insert the CF card.
2	Enter	Touch Screen Calibration	
3	Enter Touch five crosses as they appear. Enter	Touch five crosses as they appear	
4	Next	World Clock (World Map)	
5	Next	World Clock (Calender, Clock)	
6	Next	Owner Properties	
7	Next	Synchronizing with your Desktop Computer	
8	Next	Differences from Microsoft Windows	
9	Next	Finished!	
10	Done	Windows CE Menu Display	
11	Connect A-20 and a PC	Copy Diag 340EXE to A-20 from CD.	Make sure the diagnostic program is copied.
12	Disconnect A-20 and the PC		
13	Double click Diag icon	** Main Menu ** 0 AUTO MODE 1 DISPLAY 2 TOUCH PANEL 3 MEMORY 4 SERIAL 5 POWER CONTROL 6 AUDIO 7 OTHERS 8 AUTO MENU1 9 AUTO MENU2 – AUTO MENU3 CPROG Rev, 0.83 for ZX-34x(APO OFF)	Make sure that the diagnostic program starts.

Notes: • If the diagnostic program is not stored in the RAM, you need to load the program otherwise the tests 11, 12 cannot be done.
• Take CF card out after turning the power off.
• When new Diag program comes out, the Rev. value will vary.
• To make the task bar disappear, touch the task bar with the stylus or press control + ESC.

Step	Operation	Display	Note
1	Boot inspection program.	** Main Menu ** 0 AUTO MODE 1 DISPLAY 2 TOUCH PANEL 3 MEMORY 4 SERIAL 5 POWER CONTROL 6 AUDIO 7 OTHERS 8 AUTO MENU1 9 AUTO MENU2 – AUTO MENU3 CPROG Rev, 0.83 for ZX-34x(APO OFF)	To continue the inspection you must make the task bar disappear. When there is a task bar on the bottom of the display press Ctrl + Esc to make it disappear.
2	1		Checker pattern
3	Space		Reverse checker pattern
4	Space		Frame. The most outside dots.
5	Space		All dots
6	Space		No display

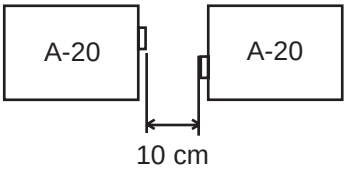
Step	Operation	Display	Note
7	Space, Alt + <, Alt + >	** Main Menu ** 0 AUTO MODE 1 DISPLAY 2 TOUCH PANEL 3 MEMORY 4 SERIAL 5 POWER CONTROL 6 AUDIO 7 OTHERS 8 AUTO MENU1 9 AUTO MENU2 – AUTO MENU3 CPROG Rev, 0.83 for ZX-34x(APO OFF)	Check variable resistor. Check if display brightness is changeable.
8	2	** Touch Panel ** 1 Case 2 Points 3 Cross	
9	2		
10	Tap on four of the crosses in any order	Touch Panel- - - -> OK	NG if crosses remain on the display after tapping all four crosses.
11	Enter	** Touch Panel ** 1 Case 2 Points 3 Cross	
12	3		
13	Trace on the center of the black lines. ①→② ③→④		OK when the lines are reversed.
14	Enter	** Touch Panel ** 1 Case 2 Points 3 Cross	

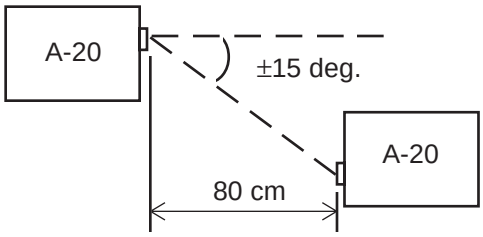
Step	Operation	Display	Note
15			Inspection of Auto-hide function. Touch four points ①→④ as shown in the left. NG if no sound is heard.
16	Enter, 3	** Memory ** 1 ROM CHECK SUM 2 ROM BUS CHECK	
17	1	ROM1=059a ROM2=059a ROM3=***	
18	Enter	** Memory ** 1 ROM CHECK SUM 2 ROM BUS CHECK	
19	Enter, 6	** Audio ** 1 0.5KHz 2 1KHz 3 2KHz 4 Record	
20	3	AUDIO 2KHz	Make sure that the unit emits a sound.
21	Enter, 4	R Key :Start Recording P Key :Play Recorded Sound Enter Exit	
22	Press R then speak “test test”, S	Push ″S″ Key to Stop Recording	Start recording. Stop recording.
23	P, S	Push ″S″ Key to Stop playing	Start replay. Check your voice “test test”. Quit replay.
24	Enter, Enter, 7	** Others ** 1 Switch 2 PCMCIA(implement) 3 PCMCIA(RAM card) 4 Compact Flash(CDs) 5 Keyboard SERIAL1 6 Keyboard SERIAL2 8 Compact Flash	
25	1	VDET1 OFF VDET2 OFF VDET1R ON VDET2R ON VDET3 OFF VDETS OFF Recharge OFF VDETC3 OFF VDETC5 ON AC Adapter NOT USED Cover CLOSED FC Cover CLOSED	Red LED flashes.

Step	Operation	Display	Note
26		VDETS OFF	Make sure backup battery is installed.
27	Remove backup battery	VDETS ON	
28	Put backup battery back in		
29	Press battery notification SW.	Recharge ON	
30	Release battery notification SW.	Recharge OFF	
31	Plug in AC adapter.	AC Adapter USED	
32	Install lithium battery		Green LED lights.
33	Rmove battery cover. Replace the battery with alkaline battery. Put the cover back on.		Make sure green LED goes out. Put battery cover back on after checking.
34	Plug out AC adapter	AC Adapter NOT USED	
35	Slide the battery cover lock switch to FREE	COVER OPEN	
36	Slide the battery cover lock switch to LOCK	COVER CLOSED	
37	Remove CF cover	FC COVER OPEN	
38	Put CF cover back on	FC COVER CLOSED	
39	Press Indicator clear button		Red LED goes out.
40	Enter, 6	** Keyboard Serial **	
41	Light, On, Esc, 1, 2, 3, 4, 5, 6, 7, 8, 9, 0, –, BS, ~, q, w, e, r, t, u, i, o, p, +, |, Enter, Tab,a, s, d, f, g, h, j, k, l, ;, ', Enter, Shift, z, x, c, v, b, n, m, <, >, ?, ↑, Caps, Ctrl, Windows, Fn, Alt, Space, {, }, ←, ↓, →	** Keyboard Serial ** KEY ——→ OK	Press Windows key. Wait for two seconds, then press Fn key.
42	Enter, Enter	** Main Menu ** 0 AUTO MODE 1 DISPLAY 2 TOUCH PANEL 3 MEMORY 4 SERIAL 5 POWER CONTROL 6 AUDIO 7 OTHERS 8 AUTO MENU1 9 AUTO MENU2 – AUTO MENU3 CPROG Rev, 0.83 for ZX-34x(APO OFF)	
43	Reset	(Power off)	

IrDA Communication Test

Prepare 2 units and place them as follows;





Step	UNIT-1		UNIT-2		Note
	Operation	Display	Operation	Display	
IrDA		** Main Menu ** 0 AUTO MODE 1 DISPLAY 2 TOUCH PANEL 3 MEMORY 4 SERIAL 5 POWER CONTROL 6 AUDIO 7 Others		** Main Menu ** 0 AUTO MODE 1 DISPLAY 2 TOUCH PANEL 3 MEMORY 4 SERIAL 5 POWER CONTROL 6 AUDIO 7 Others	
	4	** Serial ** <RS232C Check> 1 Loop Back 2 Send/Receive <IrDA Check> 3 Interactive 4 Send/Receive <3 PIN Check> 5 Loop Back	4	** Serial ** <RS232C Check> 1 Loop Back 2 Send/Receive <IrDA Check> 3 Interactive 4 Send/Receive <3 PIN Check> 5 Loop Back	
	4	<Infrared SEND/RECEIVE> 1 Send data (MAX Baudrate) 2 Receive data(MAX Baudrate) 3 Send data (MIN Baudrate) 4 Receive data(MIN Baudrate)	4	<Infrared SEND/RECEIVE> 1 Send data (MAX Baudrate) 2 Receive data(MAX Baudrate) 3 Send data (MIN Baudrate) 4 Receive data(MIN Baudrate)	
	1	<Infrared SEND/RECEIVE> 1 Send data (MAX Baudrate) 2 Receive data(MAX Baudrate) 3 Send data (MIN Baudrate) 4 Receive data(MIN Baudrate) <SEND MODE>		<Infrared SEND/RECEIVE> 1 Send data (MAX Baudrate) 2 Receive data(MAX Baudrate) 3 Send data (MIN Baudrate) 4 Receive data(MIN Baudrate)	
		<Infrared SEND/RECEIVE> 1 Send data (MAX Baudrate) 2 Receive data(MAX Baudrate) 3 Send data (MIN Baudrate) 4 Receive data(MIN Baudrate) <SEND MODE>	2	<Infrared SEND/RECEIVE> 1 Send data (MAX Baudrate) 2 Receive data(MAX Baudrate) 3 Send data (MIN Baudrate) 4 Receive data(MIN Baudrate) <RECEIVE MODE> HHHHHHHHHHHHHHHHH HHHHHHHHHHHHHHHHH HHHHHHHH.....	"H" indication continuing without error message for more than 1 second (ERROR message is indicated in transmission beginning and transmission closing, it is normal.)

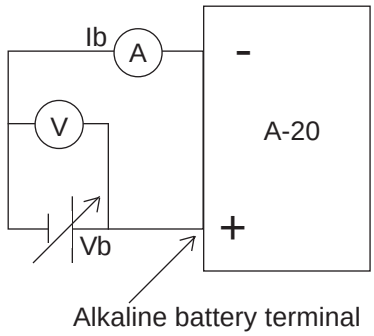
Step	UNIT-1		UNIT-2		Note
	Operation	Display	Operation	Display	
	ENTER	<Infrared SEND/RECEIVE> 1 Send data (MAX Baudrate) 2 Receive data(MAX Baudrate) 3 Send data (MIN Baudrate) 4 Receive data(MIN Baudrate)		HHHHHHHHHHHHHHHHH HHHHHHH	Make sure H display stops
		<Infrared SEND/RECEIVE> 1 Send data (MAX Baudrate) 2 Receive data(MAX Baudrate) 3 Send data (MIN Baudrate) 4 Receive data(MIN Baudrate)	ENTER	<Infrared SEND/RECEIVE> 1 Send data (MAX Baudrate) 2 Receive data(MAX Baudrate) 3 Send data (MIN Baudrate) 4 Receive data(MIN Baudrate)	
		<Infrared SEND/RECEIVE> 1 Send data (MAX Baudrate) 2 Receive data(MAX Baudrate) 3 Send data (MIN Baudrate) 4 Receive data(MIN Baudrate)	1	<Infrared SEND/RECEIVE> 1 Send data (MAX Baudrate) 2 Receive data(MAX Baudrate) 3 Send data (MIN Baudrate) 4 Receive data(MIN Baudrate) <SEND MODE>	
	2	<Infrared SEND/RECEIVE> 1 Send data (MAX Baudrate) 2 Receive data(MAX Baudrate) 3 Send data (MIN Baudrate) 4 Receive data(MIN Baudrate) <RECEIVE MODE> HHHHHHHHHHHHHHHHH HHHHHHHHHHHHHHHHH HHHHHHHH.....		<Infrared SEND/RECEIVE> 1 Send data (MAX Baudrate) 2 Receive data(MAX Baudrate) 3 Send data (MIN Baudrate) 4 Receive data(MIN Baudrate) <SEND MODE>	"H" indication continuing without error message for more than 1 second (ERROR message is indicated in transmission beginning and transmission closing, it is normal.)
		HHHHHHHHHHHHHHHHH HHHHHHH	ENTER	<Infrared SEND/RECEIVE> 1 Send data (MAX Baudrate) 2 Receive data(MAX Baudrate) 3 Send data (MIN Baudrate) 4 Receive data(MIN Baudrate)	Make sure H display stops
	ENTER	<Infrared SEND/RECEIVE> 1 Send data (MAX Baudrate) 2 Receive data(MAX Baudrate) 3 Send data (MIN Baudrate) 4 Receive data(MIN Baudrate)		<Infrared SEND/RECEIVE> 1 Send data (MAX Baudrate) 2 Receive data(MAX Baudrate) 3 Send data (MIN Baudrate) 4 Receive data(MIN Baudrate)	Change the communication distance or angle, and repeat the IrDA communication check.
	ENTER, ENTER	** Main Menu ** 0 AUTO MODE 1 DISPLAY 2 TOUCH PANEL 3 MEMORY 4 SERIAL 5 POWER CONTROL 6 AUDIO 7 Others	ENTER, ENTER	** Main Menu ** 0 AUTO MODE 1 DISPLAY 2 TOUCH PANEL 3 MEMORY 4 SERIAL 5 POWER CONTROL 6 AUDIO 7 Others	End of IrDA check

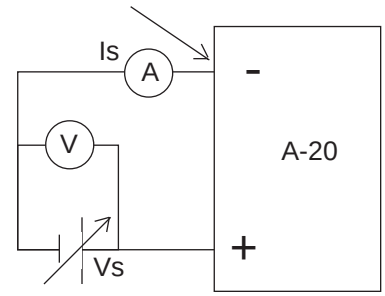
Current Consumption and Voltage Detectors Check

Prepare the following items;

1 : Power supply 1 unit
2 : Ammeter 1 unit
3 : Voltmeter 1 unit
4 : AC adapter 1 unit
5 : Charger 1 unit

Current Consumption Check

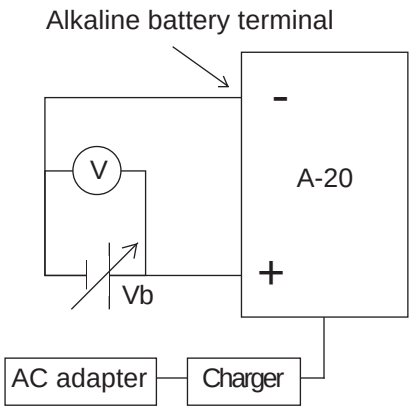
Step	Operation	Display (Wiring)	Note
Setting	1: Maximum of contrast dial. 2: Set the range of Ammeter to 1 A. 3: Vb = 2.6 ± 0.1 V		Connect the items as shown. Do not load the backup battery.
2	Boot the diagnostic program	** Main Menu ** 0 AUTO MODE 1 DISPLAY 2 TOUCH PANEL 3 MEMORY 4 SERIAL 5 POWER CONTROL 6 AUDIO 7 Others	To boot the diagnostic, refer to page 43.
Main Battery at SLEEP	ON, 3	** Power Control ** 1 40MHz 2 standby 3 sleep Sleep mode	Current consumption at SLEEP. Measure the current. Ib = 50 mA or under.
Main Battery ON	5	Currently CPU clock is 180MHz Push on key to exit	Current consumption at ON. Measure the current. Ib = 650 mA or under.
5	ON	** Main Menu ** 0 AUTO MODE 1 DISPLAY 2 TOUCH PANEL 3 MEMORY 4 SERIAL 5 POWER CONTROL 6 AUDIO 7 Others	

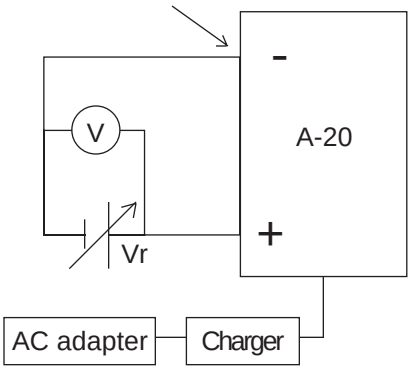
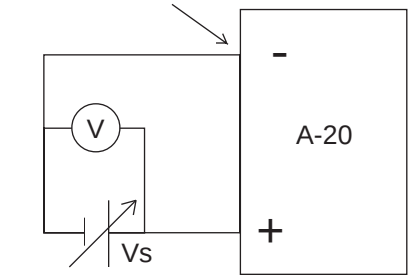
Step	Operation	Display (Wiring)	Note
Main Battery at OFF	ON	(Power off)	Current consumption at OFF. Measure the current. Ib = 1.4 mA or under
Backup battery	1 : Turn the power off. 2 : Supply the voltage to backup battery terminals as right figure . 3 : Remove main batteries. 4 : Measure the current. Vs = 3.0 ± 0.1 V	Backup battery terminal  	Connect the items as shown.
		(No display)	Current consumption of backup battery. Measure the current. Is = 450 µA or under.

Voltage Detectors Check

Check the following detectors;

VDET1: Low battery message detector for alkaline batteries.(2.0 V ± 1 %)
VDET2: Foced power off detector for alkaline batteries.(1.6V ± 1 %)
VDET1R: Low battery message detector for rechargeable battery.(3.3 V ± 2 %)
VDET2R: Foced power off detector for rechargeable battery.(3.0 V ± 2 %)
VDETS: Low battery message detector for back-up battery.(2.7 V ± 1 %)

Step	Operation	Display (Wiring)	Note
Setting	Vb = 2.6 ± 0.02 V		Connect the items as shown.
	ENTER, 7, 1	VDET1 OFF VDET2 OFF VDET1R OFF VDET2R (indefinite) VDET3 OFF VDETS ON Recharge OFF CHKPRG OFF AC Adapter USED Cover CLOSED CardLock CLOSED Cradle NOT STAY	
VDET1	Put power supply voltage down by degrees.	VDET1 ON VDET2 OFF	Measure the voltage that VDET1 becomes ON. VDET1 = 2.0 V ± 5 %
VDET2	Put power supply voltage down by degrees.	VDET1 ON VDET2 ON	Measure the voltage that VDET2 becomes ON. VDET2 = 1.6 V ± 1 %

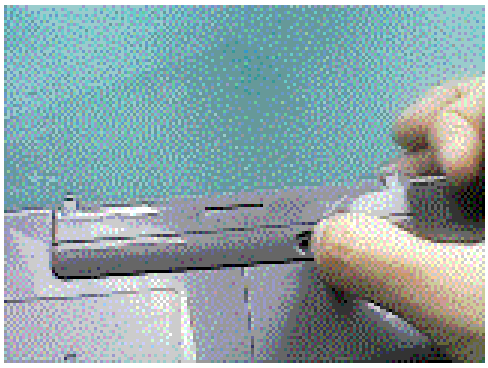
Step	Operation	Display (Wiring)	Note
Setting	Change to connect power supply to the terminals for rechargeable battery. Vr = 2.6 V	Rechargeable battery terminal 	Connect the items as shown.
VDET1R	Put power supply voltage down by degrees.	VDET1R ON VDET2R OFF	Measure the voltage that VDET1R becomes ON. VDET1R= 3.3 V ± 2 %
VDET2R	Put power supply voltage down by degrees.	VDET1R ON VDET2R ON	Measure the voltage that VDET2R becomes ON. VDET2R= 3.0V ± 2 %
VDETS	Change to connect power supply to the terminals for backup battery. Vs = 3.0 V	Backup battery terminal 	Connect the items as shown.
	Put power supply voltage down by degrees.	VDETS ON	Measure the voltage that VDETS becomes ON. VDETS = 2.7 V ± 1 %

DISASSEMBLY • ASSEMBLY

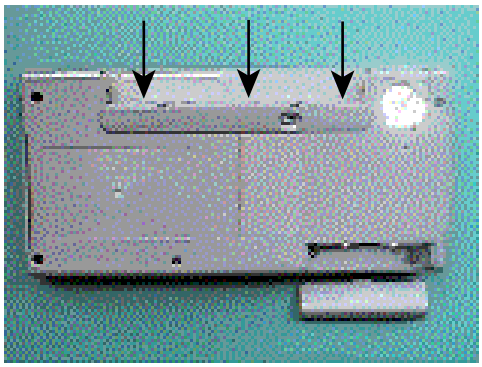
1. Module

1. Remove dummy card and stylus.
2. Remove the backup battery cover by pressing a point with the stylus shown below, then remove the backup battery.

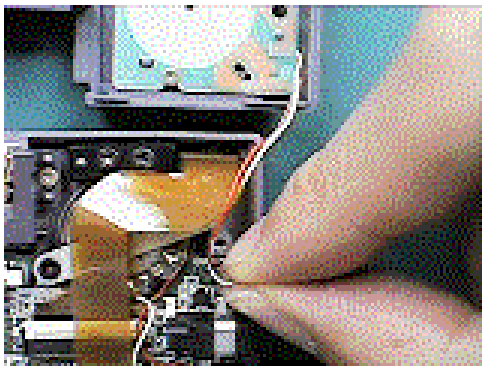
3. Remove the main batteries by releasing the lever.



4. Remove the flash memory card cover (23).
5. Unscrew six screws (5).
6. Open the case by unhooking three places by pressing from outside.



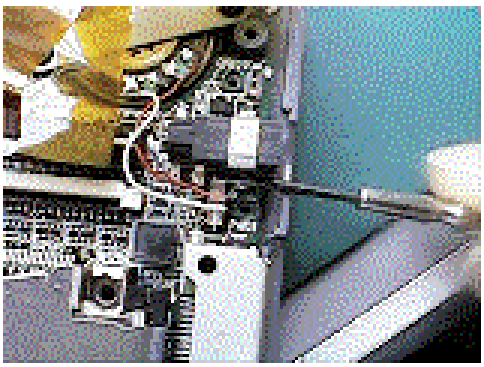
7. Remove the connecter in the main battery campartment leading from the backup battery compartment by pulling it straight up.
   Caution:Pulling the wire may cause the pins and hooks to break.



8. Separate upper case and lower case.

2. Upper case ass'y

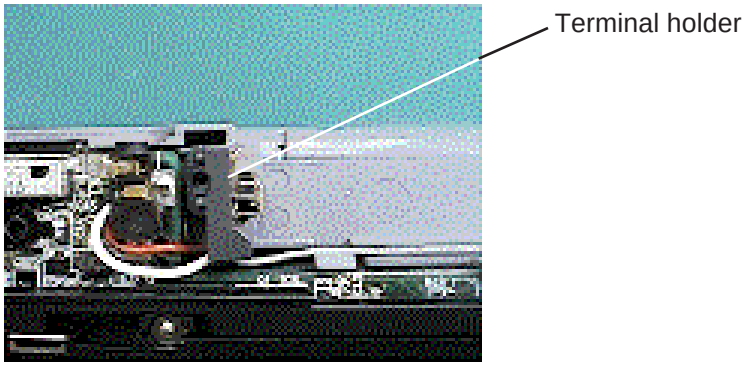
1. Remove four connectors placed on the main board (38).
   Caution: Do not pull the wire that leads from the speaker. Use a minus screw driver to remove the connector as shown below.



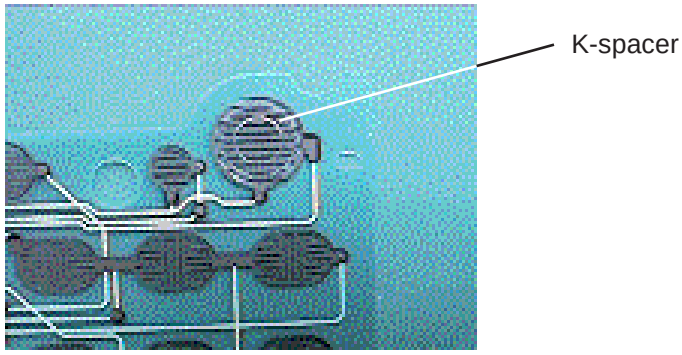
2. Remove ROM board (10).

3. Unscrew ten screws (30).

4. Unscrew two screws (30) to remove the terminal holders. Remove both battery terminal.



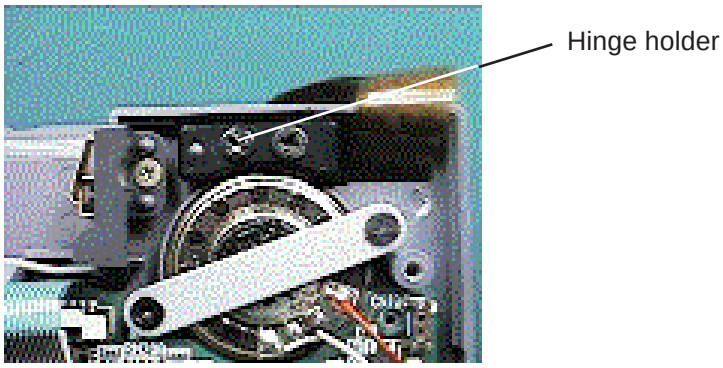
5. Remove the terminal wire, then remove the main board.
6. When you replace K-film (35), stick K-spacer (34) on the “ON” key on new K-film.
   * This is to prevent from accidentaly turning the computer off.



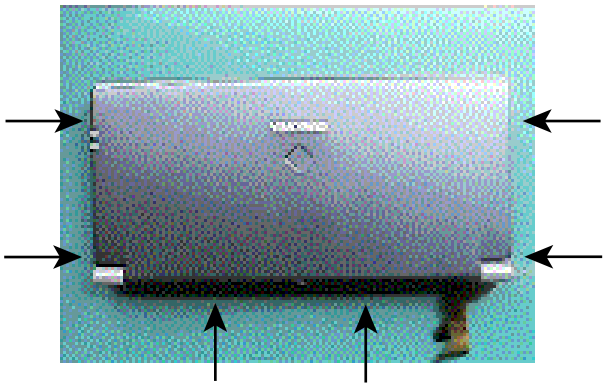
3. Removal of touch panel and LCD unit

* Removal is possible without removing the main board.

1. Unscrew two screws (25), then remove hinge holder (24).

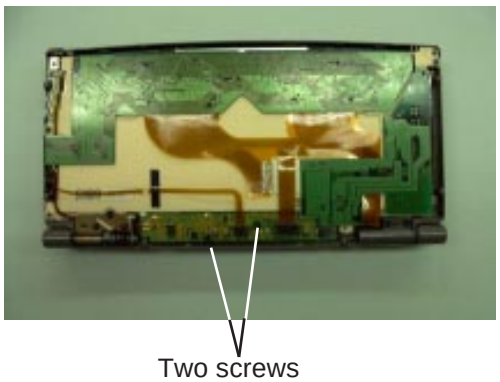


2. Set the lower case with diplay facing up and unscrew six screws (2).

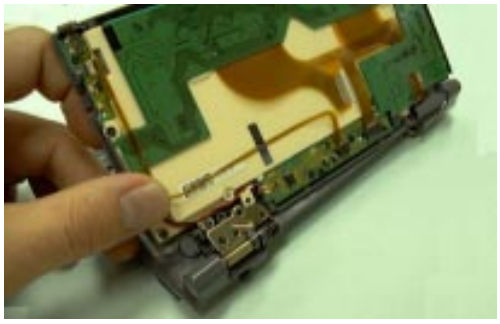


3. Lift up the side with hinges and remove DP lower case (1).

4. Unscrew two screws (56) from the hinge on FPC side.

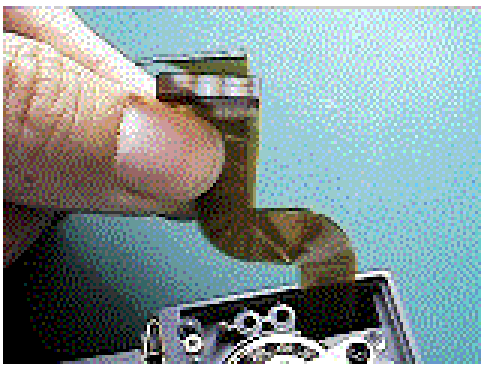


5. Remove three screws (56) from the hinge on tilt unit side then open the diplay at an angle of about 45 degrees and slide it sideways.

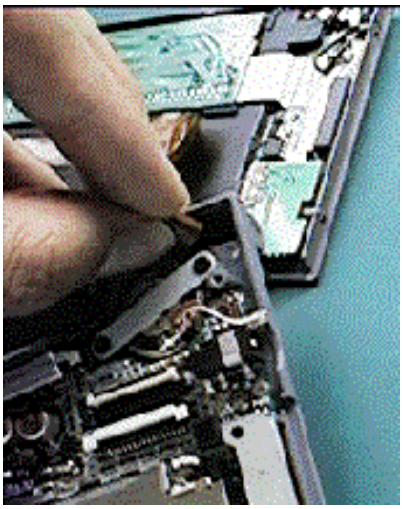


6. Remove the hinges and place the cases flat as shown below.

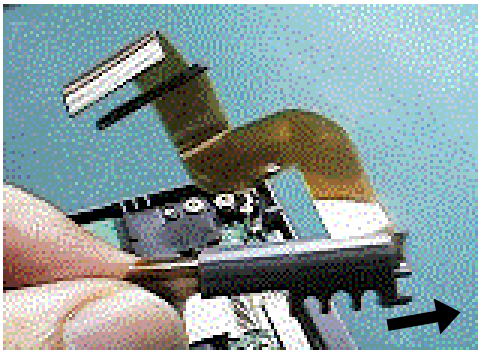
7. Hold two FPCs togother and roll them up as shown below.



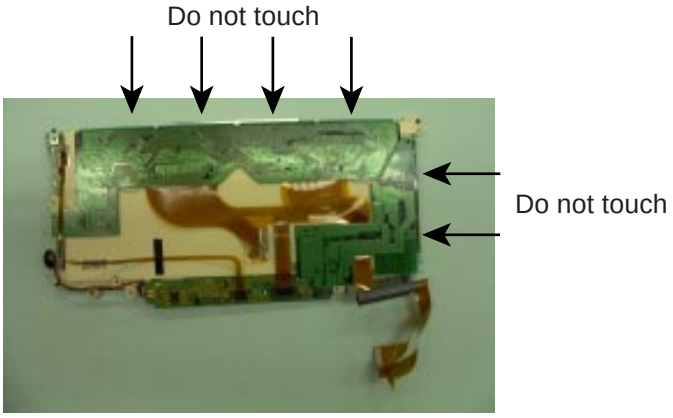
8. Lift up the main board side, then tilt the case with the board and pass the rolled up FPCs through the hole of the case and separate the keyboard case.



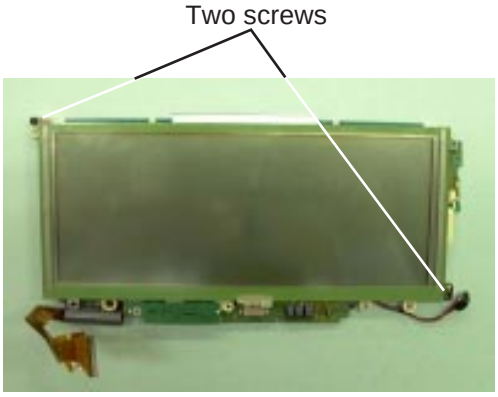
9. Slide the shaft piece (55) to the direction of the arrow to remove it.



10. Remove seven screws (56) and screw (49) , then remove LCD unit.
    Caution:When doing so do not touch the TAB shown by the arrows below.
    (To prevent open circuits which cause no display)



11. Remove the connector of the touch panel.
12. Unscrew two screws (56).

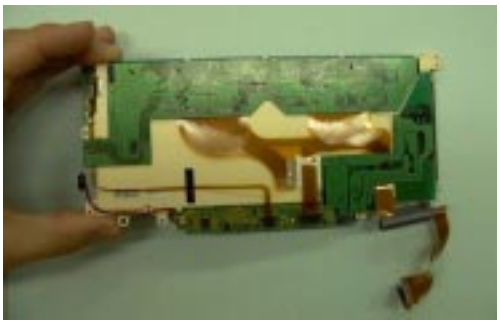


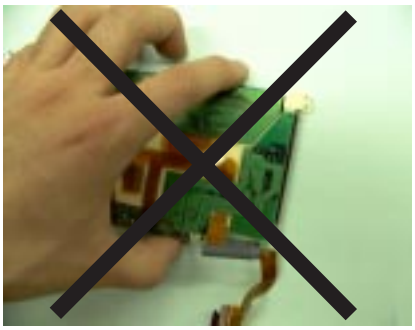
13. Lift up the touch panel and slide it upwards to remove it.

14. Remove the connector on microphone board, then remove the LCD unit.

4. Precautions when installing LCD unit.

1. Do not touch the TAB of the display. (To prevent open circuits)

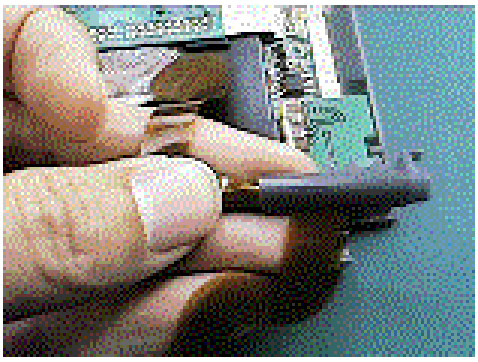




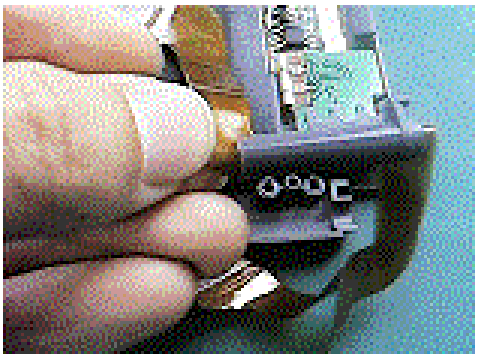
5. Installation of shaft piece

1. Roll up the FPC of the display around on a precision screwdriver.

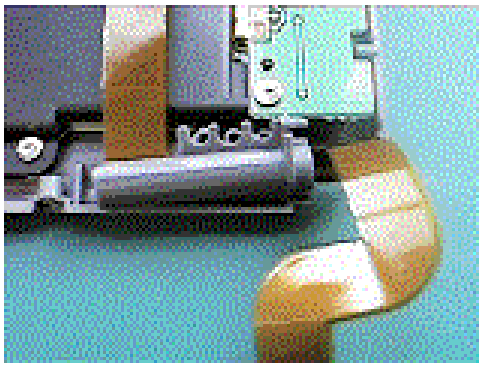
2. Pass FPC through an opening on the bottom of shaft piece (55).



3. Pass FPC through inside of shaft piece then through an opening on the top of shaft piece.



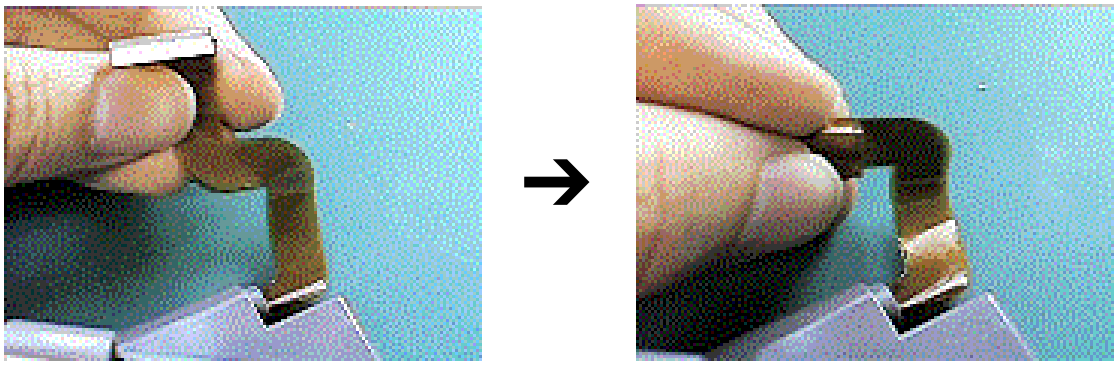
4. Pull the FPC to adjust its position relative to shaft piece.



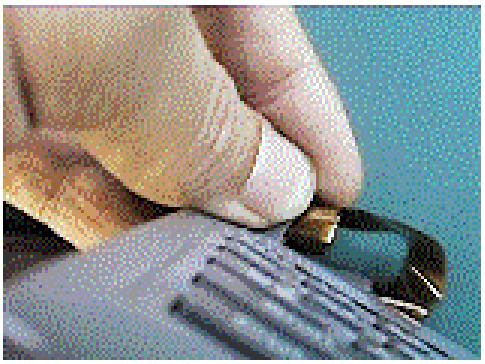
6. How to pass FPC through the upper case

1. Place upper case with keyboard side facing up above the display which is also facing up.

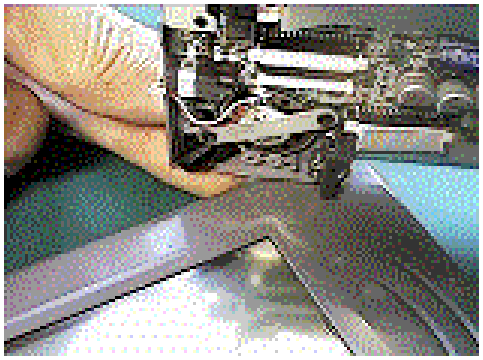
2. Hold two FPCs togother and roll them up as shown below.



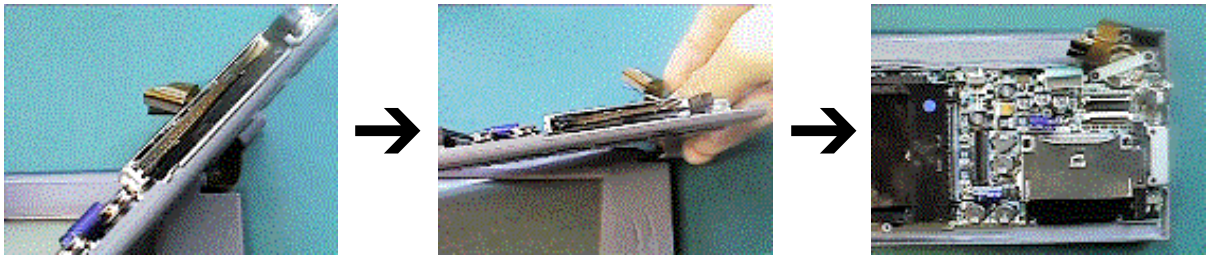
3. Let the upper case stand and pass the rolled up FPCs through the hole.



4. Pull the FPC from inside the upper case.



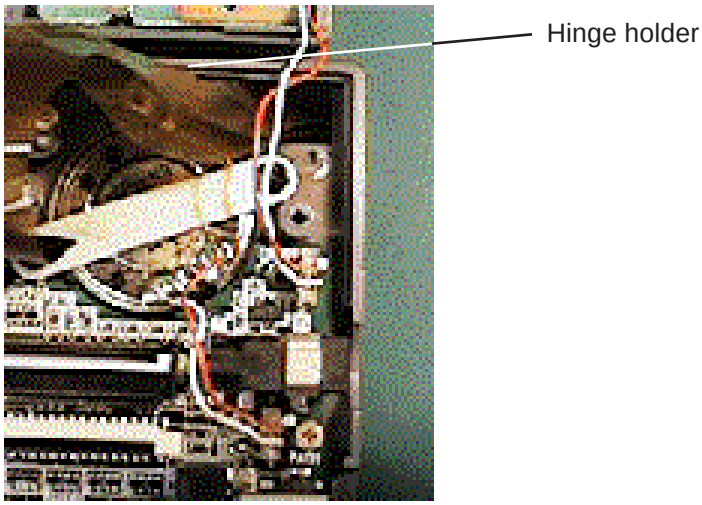
5. Pull to the point where the FPC is bent 90 degrees. Then move the upper case so that the FPC will go through the hole.



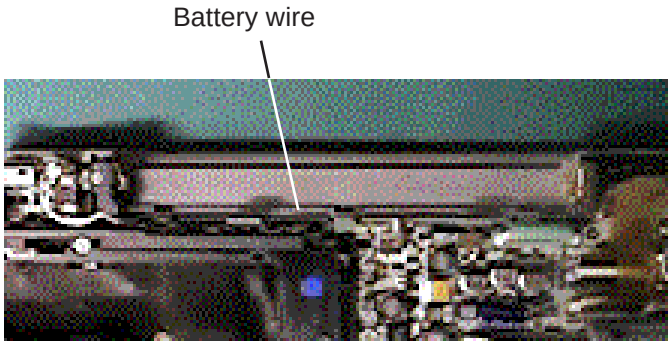
6. Pull the FPC all the way.

7. Precautions when assembling

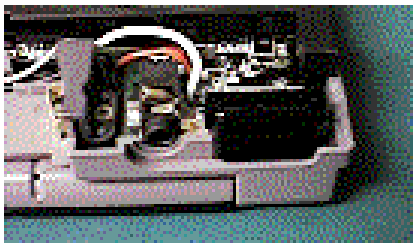
1. Speaker and backup battery both are connected by 2-pin connectors. The connector closer to the hinge are for the backup battery.
   * Be sure to connect them to the right place.
   * Make sure you get the + and – right.



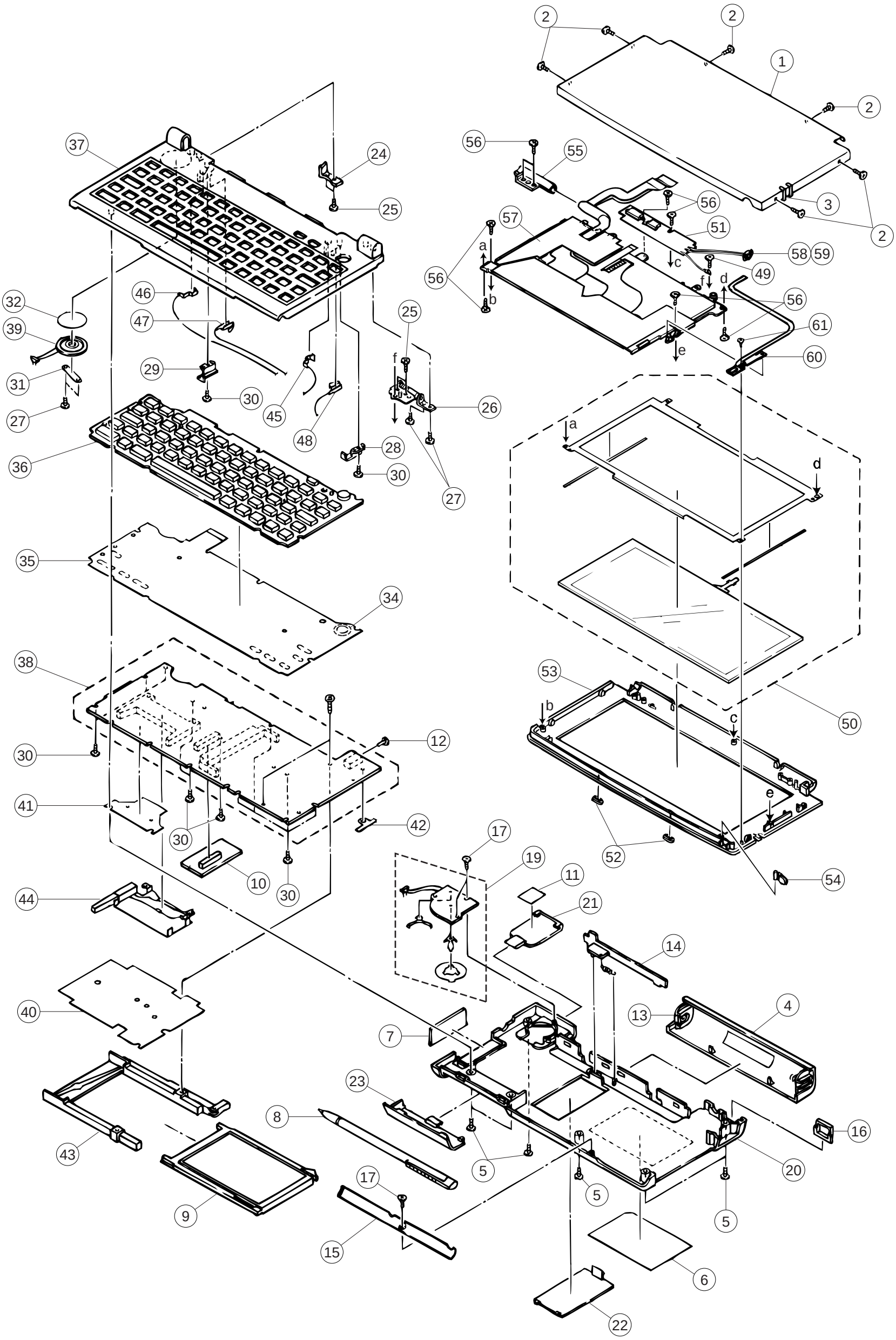
2. When closing the upper case and lower case do not forget to set the connector for backup battery.
3. Wires for the main battery, set the gray wire in the gutter of the case first then the black wire next. When putting the upper case and lower case together make sure no wires are nipped.



4. Before putting the upper case and lower case together do not forget to set the filter (16) next to the three pin connector.
5. Before putting the upper case and lower case together do not forget to set the hinge holder (24).



EXPLODED VIEW



PARTS LIST

Item	Code No.	Parts Name	Specifications	Q	R
	COMPONENT				
1	6670 1912	CASE/LOWER (DISPLAY)	C341910*1	1	C
2	6562 1170	SCREW	C442157-1	6	X
3	6566 0220	COVER/LED	C341823-1	1	X
4	6670 1908	CASE ASS'Y/BATTERY (MAIN)	C140597*2	1	B
5	6339 1750	SCREW	A33953-33	5	X
6	6566 0280	PLATE/RATING	C241038-5	1	X
7	6562 1140	COVER/CONNECTOR	C341538-1	1	B
8	6562 1730	PEN ASS'Y	C341657*1	1	A
9	6670 2075	CARD ASS'Y/DUMMY	C241046*2	1	X
10	6670 1909	PCB ASS'Y/ROM	C140601*2	1	B
11	6566 0270	LABEL/BATTERY (BACK-UP)	C341668-2	1	X
12	6390 0432	CAP	A310765B-1	1	B
	KEY LOWER CASE ASSY				
13	6418 4250	SPRING	C441562-1	1	C
14	6562 1260	LEVER/BATTERY	C241000-1	1	C
15	6562 1270	HOLDER/PEN	C241001-1	1	X
16	6562 1280	FILTER	C341539-1	1	B
17	6562 1390	SCREW	C341659-1	3	X
18	6562 2580	SPACER	C442378-1	1	X
19	6670 1650	PCB ASS'Y/BATTERY (BATTERY)	C341683*1	1	C
20	6562 1740	CASE/LOWER (KEYBOARD)	C140544-1	1	C
21	6562 1670	COVER/BATTERY (BACK-UP)	C341535-1	1	B
22	6562 1660	COVER/ROM	C341536-1	1	X
23	6562 1650	COVER/CF CARD	C341537-1	1	B
	KEY UPPER CASE UNIT				
24	6562 1310	HOLDER/HINGE	C341542-1	1	X
25	6339 1750	SCREW	A33953-33	4	X
26	3335 6652	UNIT/TILT	ST145A0001	1	C
27	6339 1750	SCREW	A33953-33	4	X
28	6562 1370	HOLDER/TERMINAL (LEFT)	C341540-1	1	X
29	6562 1380	HOLDER/TERMINAL (RIGHT)	C341541-1	1	X
30	6562 1390	SCREW	C341659-1	12	X
31	6562 1400	BLACKET/SPEAKER	C442147-1	1	X
32	6562 1410	NET/SPEAKER	C442148-1	1	X
33	6562 1890	SPRING/EARTH	C442306-1	1	X
34	6562 2550	SPACER/KEY	C442419-1	1	C
35	6566 0250	FILM/KEYBOARD	C140548-2	1	C
36	6566 0260	KEYBOARD	C140549-2	1	C
37	6566 0390	CASE/UPPER (KEYBOARD)	C140547-2	1	C
38	6670 1915	PCB ASS'Y/CPU	C140598*3	1	A
39	6670 1654	SPEAKER ASS'Y	C341682*1	1	B
40	6562 1470	SHIELD/PC CARD	C241002-1	1	X
41	6562 1480	SHIELD/CF CARD	C341559-1	1	X
42	6562 1490	BLIND	C442158-1	1	X
43	6562 1510	FRAME/CONNECTOR	305027000952000	1	C
44	6562 1520	FRAME/CONNECTOR	55021-0001	1	C
45	6670 1658	TERMINAL ASS'Y/CHGOUT (CN104)	C341715*1	1	C
46	6670 1659	TERMINAL ASS'Y/DETFULL (CN105)	C341716*1	1	C
47	6670 1660	TERMINAL ASS'Y/POSITIVE POLE (CN103)	C341717*1	1	C
48	6670 1661	TERMINAL ASS'Y/NEGATIVE POLE (CN106)	C341718*1	1	C
49	6511 4660	SCREW	A310044-25	1	X

Notes: Q – Quantity used per unit
R – Rank

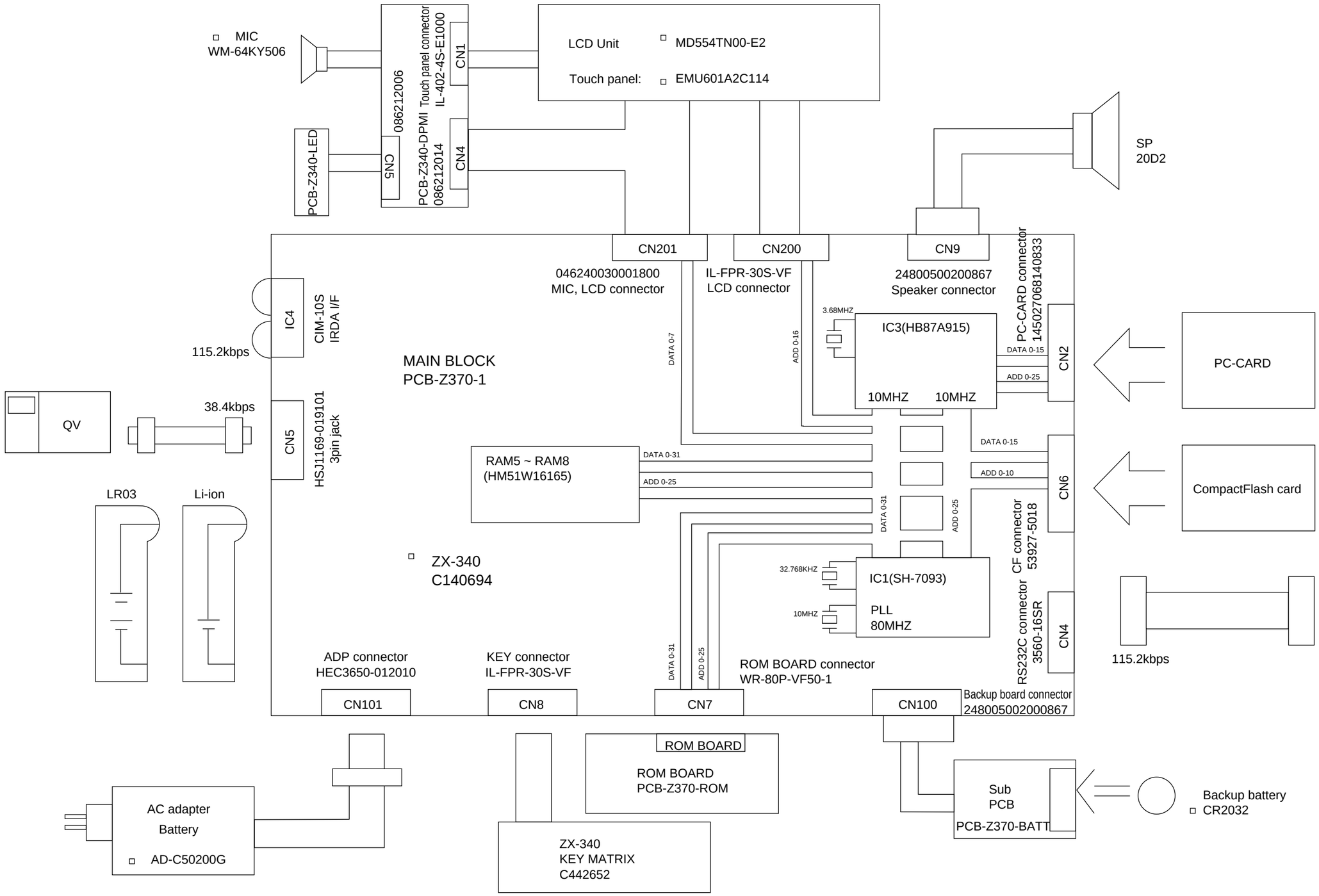
R – A: Essential
B: Stock recommended
C: Others
D: No stock recommend

Item	Code No.	Parts Name	Specifications	Q	R
	DP UPPER CASE UNIT				
50	6670 1921	TOUCH PANEL ASS'Y	C341909*1	1	A
51	6670 1919	PCB ASS'Y/MIC	C241138*1	1	C
52	6562 1440	RUBBER/STOPPER	C442144-1	2	C
53	6566 0180	CASE/UPPER (DISPLAY)	C140651-1	1	C
54	6566 0200	BUTTON/NOTIFICATION (LED)	C341825-1	1	X
55	6566 0210	SHAFT PIECE	C341824-1	1	X
56	6339 1750	SCREW	A33953-33	8	X
57	3335 6654	UNIT/LCD	MD554TN00-E2	1	A
58	6670 1920	MIC ASS'Y	C442406*2	1	B
59	6566 0240	HOLDER/MIC	C442524-1	1	C
60	6670 1918	PCB ASS'Y/LED	C341912*1	1	B
61	6562 1170	SCREW	C442157-1	1	X
	Z370-1 UNIT				
X1	2254 0540	OSCILLATOR/CERAMIC	CSTCC3.68MG-TC	1	C
X2	2254 0539	OSCILLATOR/CERAMIC	CSTCC10.0MG-TC	1	C
X3	2590 2740	OSCILLATOR/CRYSTAL	C-004R-12P15-20	1	B
CN7	2254 0558	CONNECTOR	WR-80P-VF50-1-E13	1	C
CN2	2254 0533	CONNECTOR	145027068140833	1	C
CN101	2254 0553	CONNECTOR	HEC3650-012010	1	B
CN6	2254 0554	CONNECTOR	53927-5018	1	C
CN4	3013 2586	CONNECTOR	3560-16SR1(11)	1	B
CN8,CN200	2254 0537	CONNECTOR	IL-FPR-30S-VF-E	2	B
CN9,CN100	7930 0471	CONNECTOR	24 8005 002 000867	2	B
CN5	3501 8197	JACK	HSJ1169-019010	1	C
SW1,SW101	2254 0557	SWITCH	ESE11MH2T	2	B
SW100	2254 0532	SWITCH	ESE22MH2	1	B
F100,F101	3632 0714	FUSE/CHIP	F0805B3R00FW	2	B
IC4	2254 0527	IRDA MODULE	CIM-10S	1	B
IC105,IC106	2105 6223	CONVERTER /DC-DC	MAX608ESA-T	2	C
IC111	2775 3312	CONVERTER/DC-DC	MAX1651CSA-T	1	C
IC9	2116 0225	IC/AMP	MC34119DTBEL	1	C
RAM5,RAM6	2012 5794	LSI/RAM	HM51W16165LTBV-7	2	C
RAM7,RAM8	2012 5795	LSI/RAM	HM51W16165LTBE-7	2	C
	ACCESSORY				
	3301 0448	AC ADAPTOR	AD-C50200U	1	X
	3335 6594	CABLE/RS232C	TPX1375-010100	1	X
	3335 6657	SOFTWARE/CD-ROM (MS)	CDZ340AA01A	1	X
	3335 6658	SOFTWARE/CD-ROM (CASIO)	CDZ340AA02A	1	X

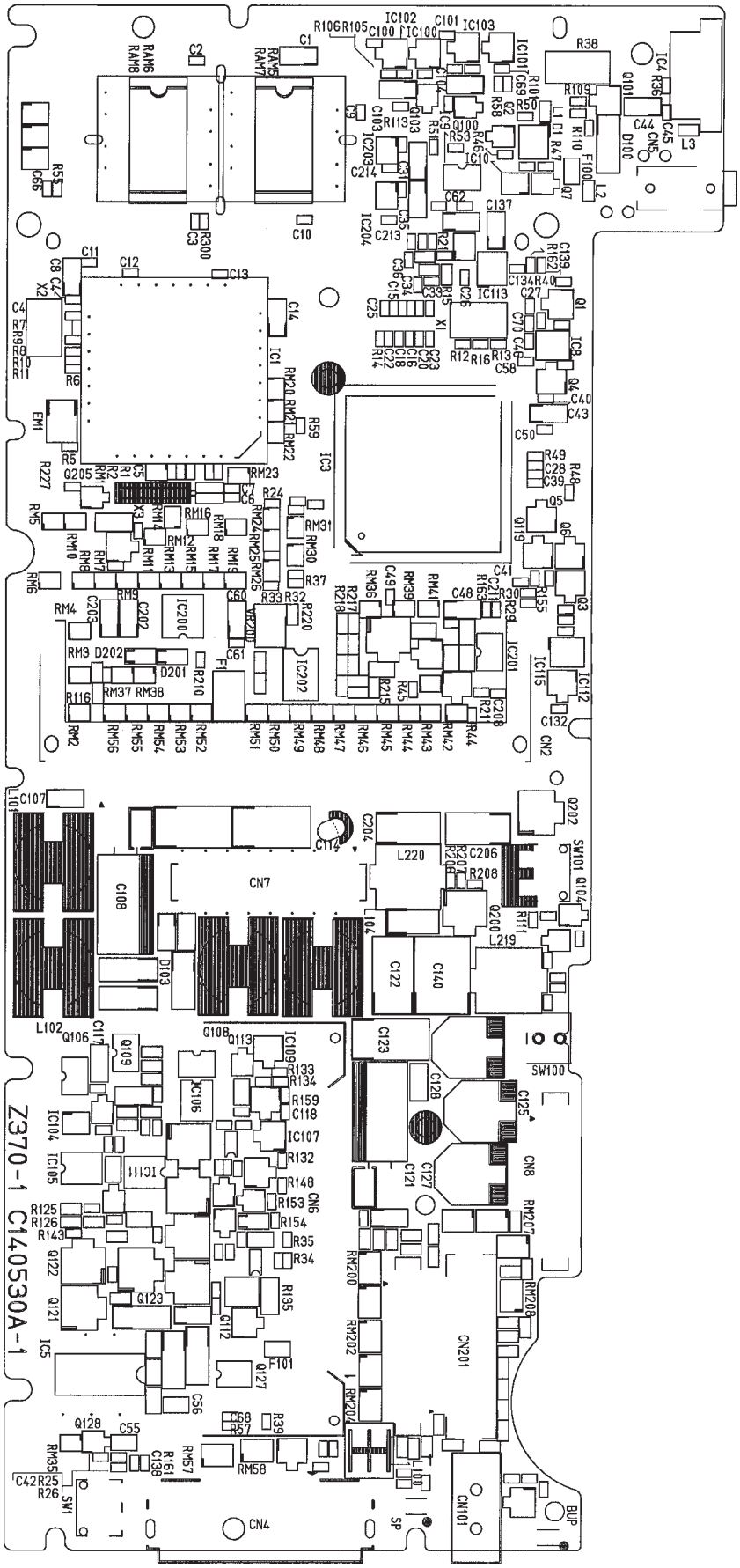
Notes: Q – Quantity used per unit
R – Rank

R – A: Essential
B: Stock recommended
C: Others
D: No stock recommend

WIRING DIAGRAM

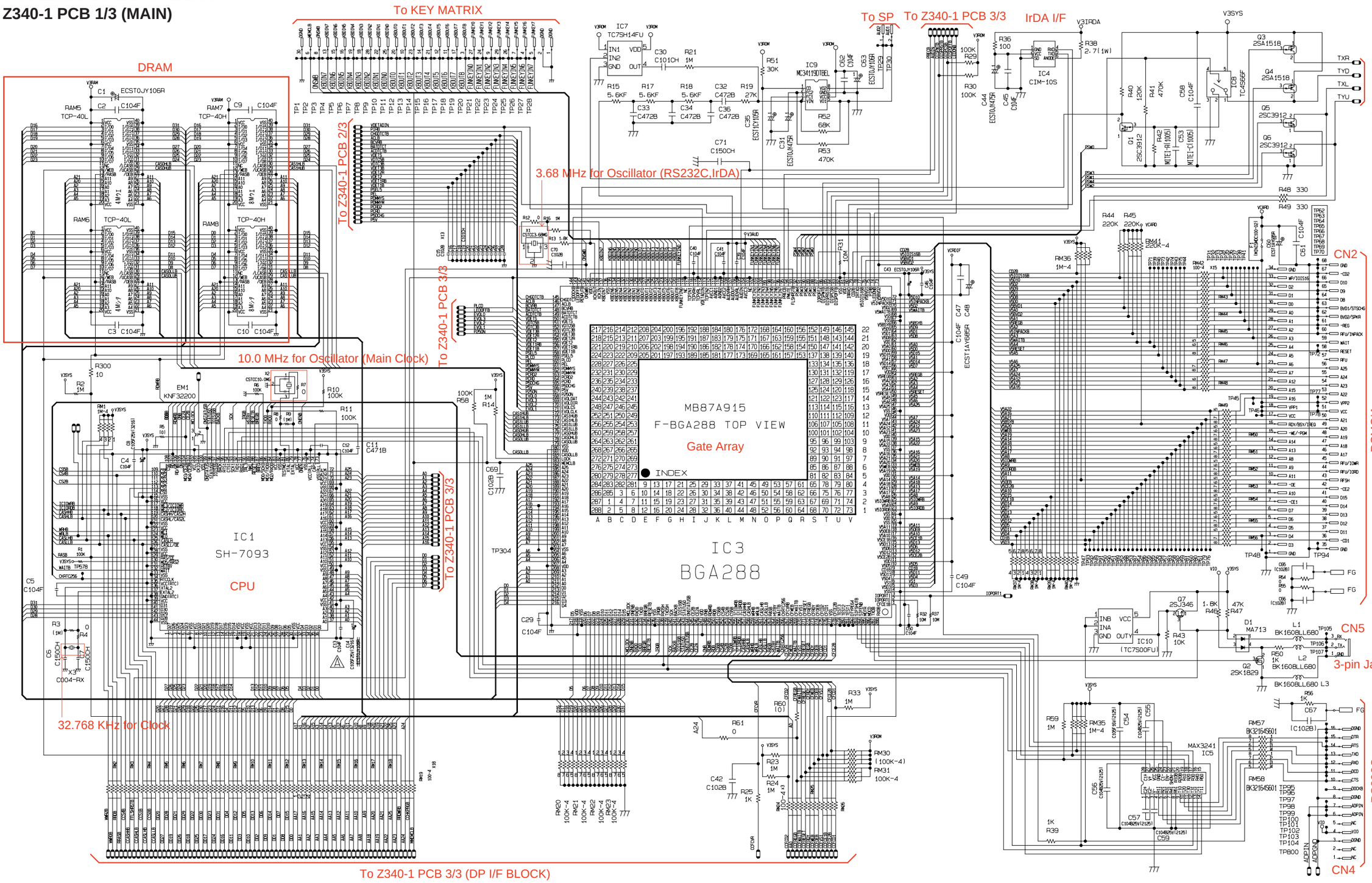


PCB VIEW

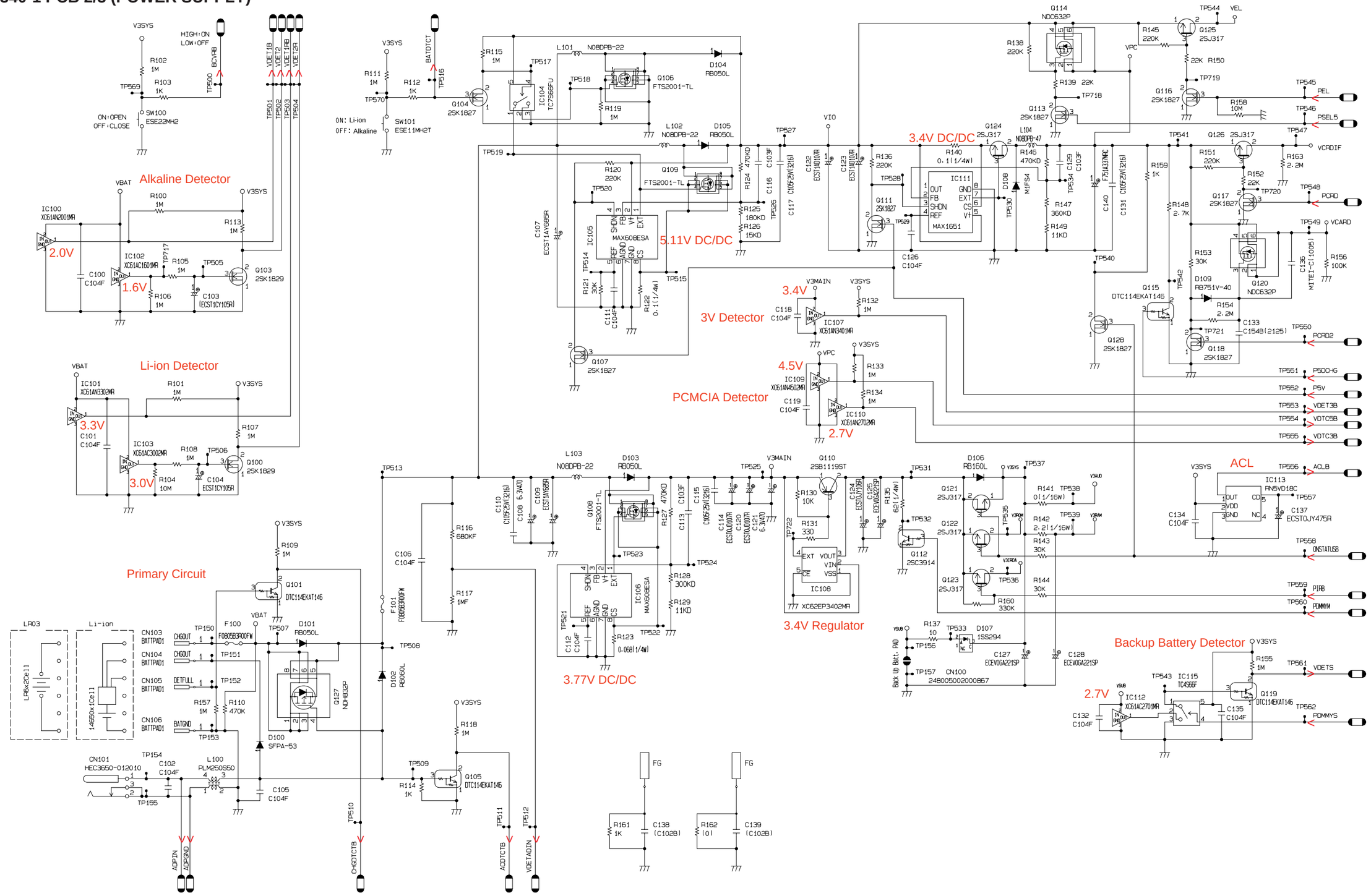


SCHEMATIC DIAGRAMS

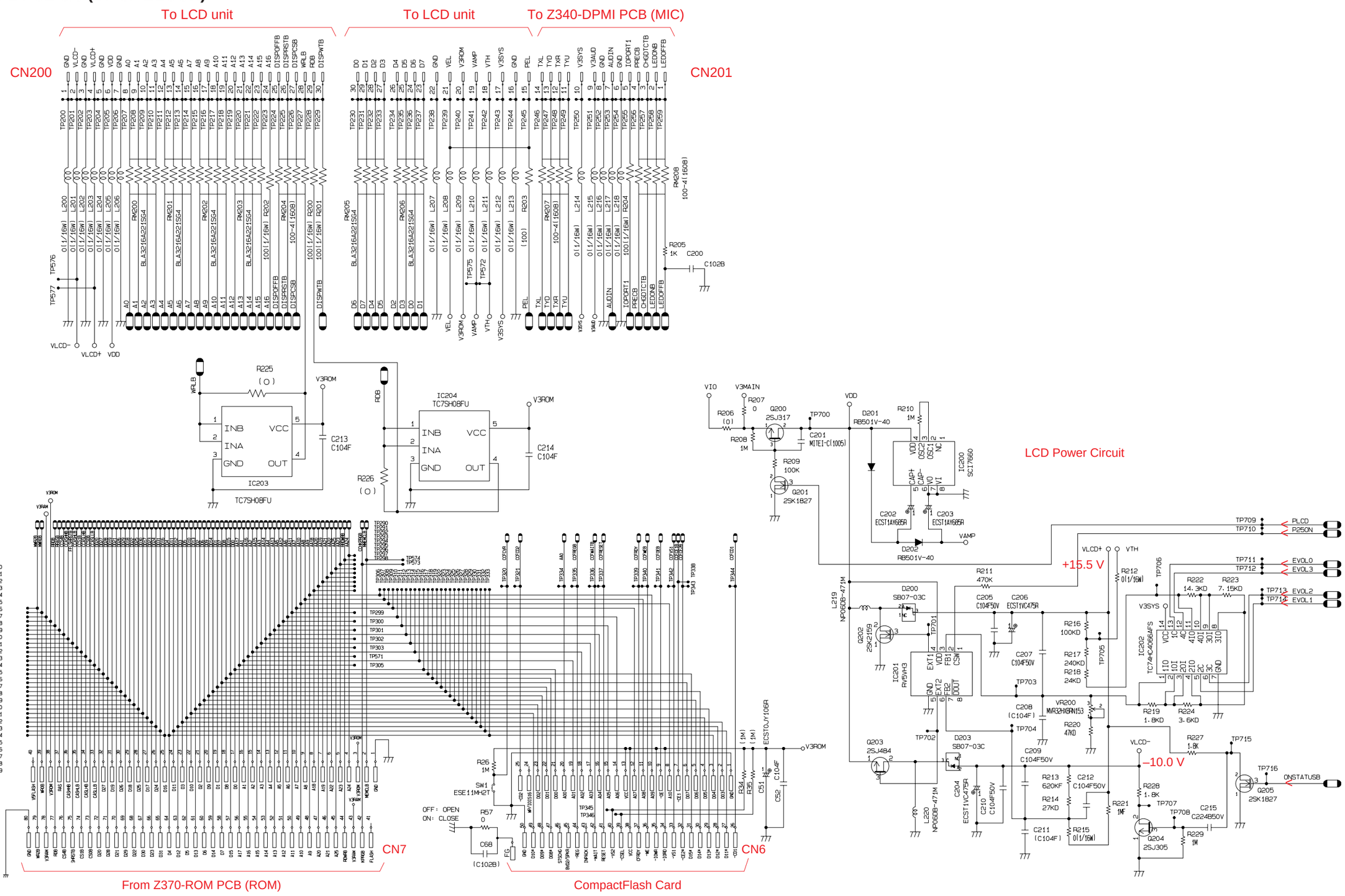
Z340-1 PCB 1/3 (MAIN)



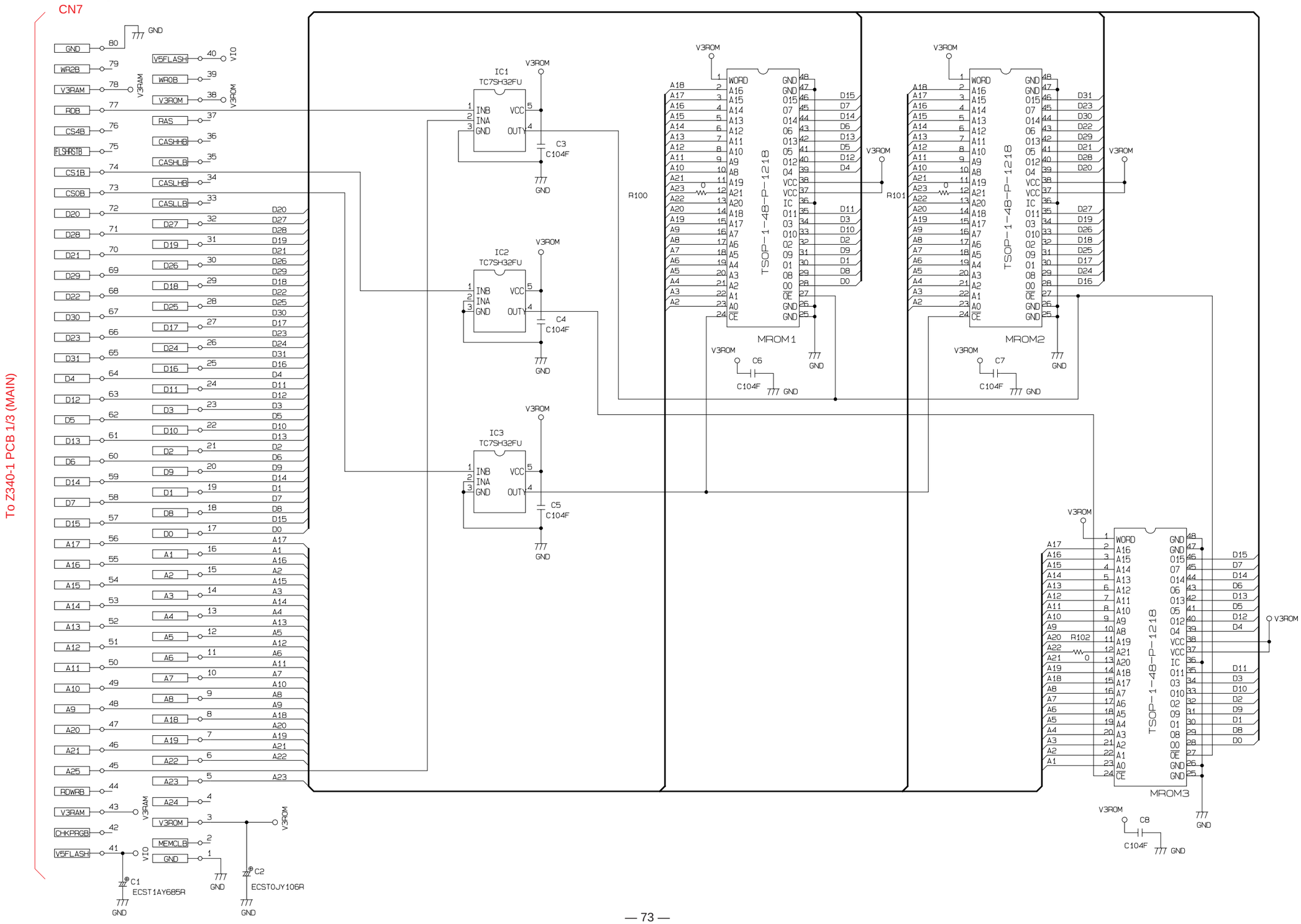
Z340-1 PCB 2/3 (POWER SUPPLY)



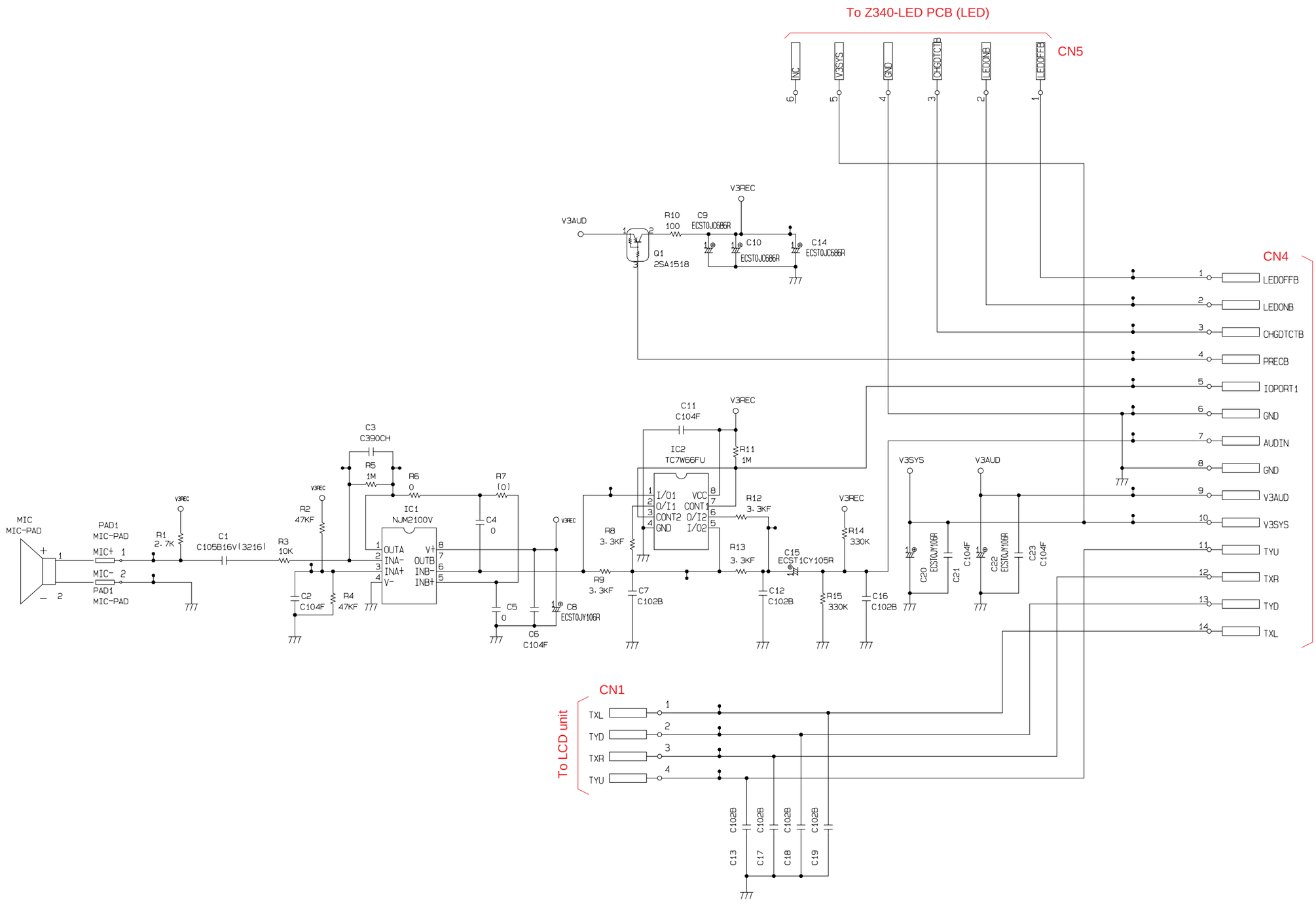
Z340-1 PCB 3/3 (DP I/F BLOCK)



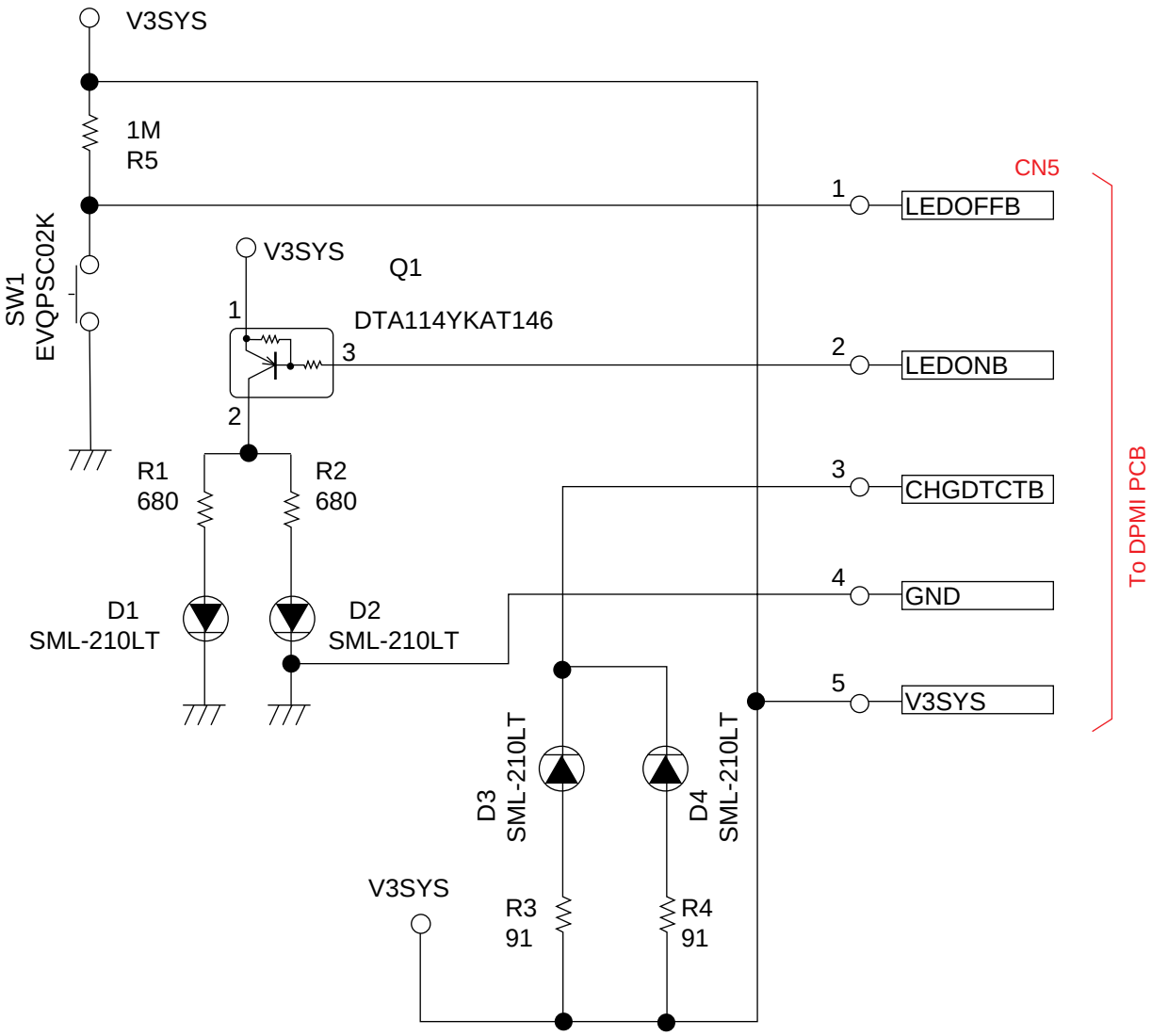
Z370-ROM PCB (ROM)



Z340-DPMI PCB (MIC)



Z340-LED PCB (LED)



KEY MATRIX

Key matrix for American English

	Key Imput0	Key Imput1	Key Imput2	Key Imput3	Key Imput4	Key Imput5	Key Imput6	Key Imput7
KeyOutput0	Esc	Tab	1	2	3	4	5	~ `
KeyOutput1	6	7	8	9	0	— -	Resv.	ELON
KeyOutput2	Q	W	E	R	T	Y	U	I
KeyOutput3	A	S	D	F	G	H	O	P
KeyOutput4	Z	X	C	V	B	N	J	K
KeyOutput5	M	< ,	L	Resv.	: ;	+ =	> .	ıı ı
KeyOutput6	Delete BackSpace	? /	| \	Resv.	PgUp ▲	Enter	Resv.	Resv.
KeyOutput7	Resv.	Space	{ [	}]	Home ◀	PgDn ▼	End ▶	Resv.

Function-key matrix

	Key Imput8	Key Imput9	Key Imput10	Key Imput11	Key Imput12	Key Imput13	Key Imput14	Key Imput15
KeyOutput8	Ctrl	Alt	Shift (R)	Shift (L)	Windows	Resv.	Fn	Resv.

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